EDISON PORTLAND CEMENT CO.

NEW VILLAGE, N.J.

CAPACITY, 8000 BARRELS DAILY

THE Edison Portland Cement Company

THOMAS A. EDISON, Chairman of the Board

ROBERT H. THOMPSON, President
W. S. MALLORY, Vice-President

WILLARD P. REID, Secretary
H. F. MILLER, Treasurer

E. MEYER, Manager of Sales

GENERAL SALES OFFICE
ST. JAMES BUILDING, NEW YORK

BRANCH OFFICES

BOSTON, MASS. Post-Office Square Building	SAVANNAH, GA. National Bank Building	PHILADELPHIA, PA. Arcade Building
NEWARK, N. J. Union Building	ORANGE, N. J. Edison Laboratory	PITTSBURGH, PA. Machesney Building

WORKS AT
NEW VILLAGE, N. J.

Works: *Post-Office Address, Stewartsville, N. J.*
Telegraph, Express and Passenger Station, New Village, N. J.

WARE BROS. COMPANY PHILA.

Letters on file/08.

EDISON PORTLAND CEMENT

WITH what shall you build your house, your home, store, mill, factory, barn, stable, garage, or any other structure, large or small? **Andrew Carnegie** answered the question when he told the conference of Governors at the White House in May, 1908, that **"Concrete promises to become superior to steel and stone in strength, durability, convenience and economy of use."**

It is not only the most durable building material, but is rapidly becoming the cheapest, owing to the increasing scarcity of lumber. It is the most indestructible as it resists fire, wind, water and earthquake. The Baltimore fire, the San Francisco disaster, the great fires in Northwest Canada, and numerous others, abundantly prove the superiority of this kind of construction. A comparison of the **fire insurance** statistics of United States and Europe shows that in the former the losses are about five to eight times as high as in the latter. This is due to the use of more fire proof materials in Europe.

Everything has its day. The tallow candle, useful in its time, gave way to the kerosene lamp, the lamp in turn yielded to illuminating gas, and finally this became subordinate to the **Edison** incandescent light. In building materials, wood gives way to brick, brick yields to stone and steel, and all become subordinate to **Concrete.**

For strength, rigidity, durability, indestructibility and adaptability, there is no building material equal to concrete. The lack of necessity for repairs and the greatly reduced fire insurance rates are subjects worthy of consideration.

Much might be written, but the building trades and the public at large recognize the above facts, as is shown by the increase in consumption from about two millions of barrels in 1892 to upwards of fifty millions in 1907.

The question is not—Shall you use Portland Cement, but **what brand** of it shall you use?

This book is intended to acquaint those who are not already users of it, with the merits of **Edison Portland Cement.**

The mill producing this cement, at New Village, N. J., is the direct result of Mr. Thomas A. Edison's inventive work

EDISON PORTLAND CEMENT

during the early eighties. Although at that time busily engaged on the electric light, phonograph, etc., he foresaw the great future for Portland Cement.

Not content with accepting the theories and practices of the times, he made a great number of elaborate and exhaustive experiments and became convinced that the **finer grinding** of cement makes a much better and more reliable product. He also learned that the finer the cement, other things being equal, the more sand it would carry, and he started out with the determination to put this finer product on the market. **To insure other things being equal** he located his plant on **exactly the same geological formations** as the other New Jersey and Pennsylvania mills.

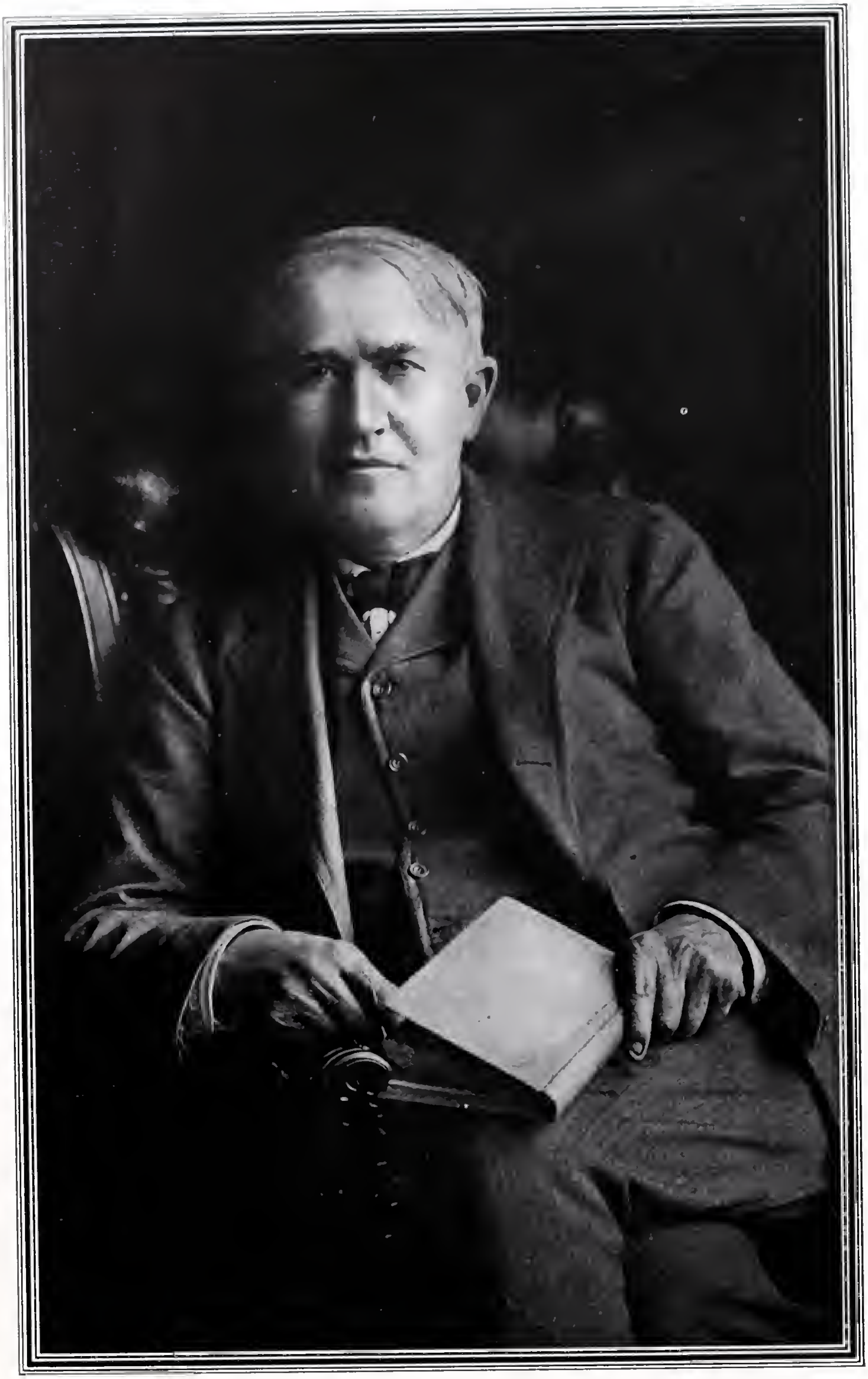
He could not improve the raw materials, so **he improved the process.** The main features of Portland Cement manufacture are **burning** and **grinding.** He improved the burning by his long kilns. Prior to this, the longest rotary kilns were 60 feet. Against the advice of experts, he increased the length from 60 to 150 feet, and how well he reckoned is shown by the fact that many others are rapidly coming to the use of them and taking out licenses under his long kiln patents.

He designed machinery that enabled him to put in competition a brand of Portland Cement that has all the qualities of other standard brands and in addition is ground so finely that **10 per cent. more** of it passes a 200-mesh sieve; that is, a sieve having 40,000 openings per square inch.

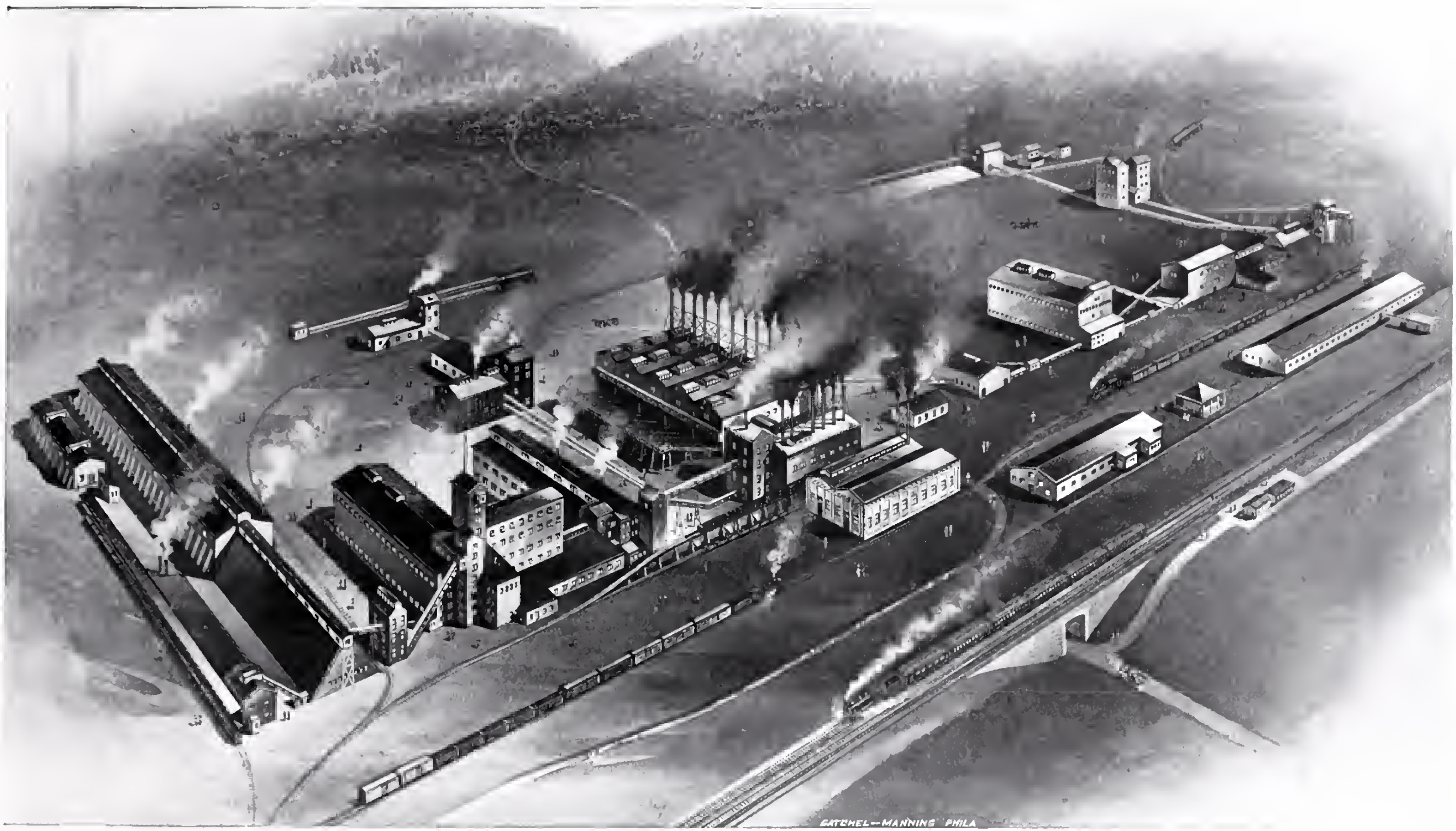
When manufacturing operations were begun, it was found that it **costs more** to grind this fine product, and when this question of additional cost was brought to Mr. Edison's attention, he still insisted on producing this fine product in the belief that eventually architects, engineers and consumers would appreciate the better quality and the product would be worth more than the more coarsely ground cements. He has always insisted on this point and such is the policy of the company.

To show that others appreciate the value of **fine grinding,** we invite you to read what eminent authorities of Germany, France, England and America say about it.

See pages 14 and 15.



Thomas A Edison



PLANT OF THE EDISON PORTLAND CEMENT COMPANY, NEW VILLAGE, N. J.

Passenger Station Freight " Express Office Telegraph "	NEW VILLAGE, N. J.		Post Office Address, STEWARTSVILLE, N. J.

GENERAL VIEW OF ONE OF THE QUARRIES.

Keystone Well Drillers are used with great economy in preparing for blasts of 30,000 to 70,000 tons of rock.

Showing one of the three 90-ton Steam Shovels ready for action. Mechanical handling replaces the old system of hand loading.

An immense deposit of PORTLAND CEMENT ROCK, prepared by Nature for man's use.

A detailed view in Quarry No. 1, showing method of handling rock of such size and weight that no crushing machinery except the **EDISON GIANT ROLLS** is capable of reducing it.

A train of stone, showing the size of the material passing to the Giant Rolls.

Head of the Crusher House, showing a partial view of the Edison Rolls, which are capable of crushing single blocks of stone weighing up to eight tons. The cut also shows a skip load of stone being automatically dumped into the hopper.

INTERIOR VIEW OF THE WEIGH HOUSE.

Here every particle of stone used in the process is ***accurately weighed.*** The two materials are delivered to different storage hoppers, the Chemist's weighing orders are posted, the scales set by his assistant and checked by the inspector and foreman, preparatory to mixing. Further than this, there is an ***absolutely automatic*** check, for, as will be observed, the scale beams are connected electrically by a copper needle dipping into a mercury bath, and the instant the beam tips, the connection is broken, the feed is stopped, and it is ***impossible*** to introduce any more material until the charge has been unloaded and the scales again brought into adjustment.

AN INTERIOR VIEW OF THE KILN ROOM.

This shows the longest rotary kilns in existence, they being 150 feet long. This building is also unique in that it is reinforced concrete; cast upon the ground and erected in the manner of structural steel. The roof beams as shown are single monoliths 50 feet between supports of concrete columns. The roof consists of slabs of concrete 6 feet by 12 feet by 4 inches thick.

EDISON PORTLAND CEMENT

HOW IT IS MANUFACTURED

RAW MATERIAL

THE cement rock or shale used in the manufacture of Edison Portland Cement is found in the same geological series that are used by every mill in the Lehigh Valley. The limestone used in all the mills is practically the same grade and many of them get it from the same quarries. **The Superiority of Edison** over others, therefore, is not in the raw materials, nor can any other mill lay claim to an advantage in this line.

PROCESS OF MANUFACTURE

With the same materials then the relative grades of the products depend upon two things:

1st. **The design of the plant in reference to—**

(*a*) Uniform handling and continuous operation.

(*b*) Control of the materials at all times.

2nd. **Mill Administration,** talent enlisted and grade of labor employed.

Under the first head we may say the **Edison Portland Cement** mill is the second **largest single plant in the United States,** if not in the world. By that we mean it is not a collection of small plants under one collective name, but a complete unit where all the material goes through the same crushing and grinding plants, through the same kiln room, the same conveying system, etc., single operating head, a perfect operating system, and a single laboratory to regulate and govern quality; **not** different quarries, different mills, different superintendents, and different laboratories with different standards, yet all making what is called one brand of cement.

Edison Portland Cement Company makes only one brand, and it is truly one brand of uniform quality because:

(*a*) All the rock comes from the same quarries.

(*b*) It all goes through the same mill and, moreover, the same conveying systems to the storehouse, not independent systems by different routes.

(*c*) It is all under the eyes of the same extensive laboratory force of chemists and testers, all of whom must work in unison and who act as a check on each other, thereby insuring quality.

The design of the mill is further marked by being such that everything is handled *automatically* by electrically driven machinery and nothing by hand, thereby reducing the **cost of production on this item and permitting a number of refinements which would otherwise be commercially impossible on account of the cost.**

To illustrate this, our crushing-rolls take stone in blocks weighing anywhere up to eight (8) tons, where other crushers take single blocks only up to 500 lbs. What we save in quarrying and handling rock we can afford to spend elsewhere, yet have our total cost such that we can compete in the market and still have a better product.

After our stone is crushed, we have a stone storage house holding 12,000 tons, which permits us to make **accurate chemical analyses** and calculate our mixtures to a pound before it is passed to the grinders.

WEIGHING MIXTURES ACCURATELY

With ample time to determine what the mixture should be, there can be no error if the weighing system is correct. We have the only **absolutely accurate weighing system** in use. In many mills the proportions are regulated by so many small quarry cars of cement rock to a given number of limestone or by the number of wheelbarrow loads, or even a worse system.

We have a pair of parallel scales, one receiving cement rock and the other limestone, and these controlled electrically in such a manner that it is impossible for the weigh-house attendant to make a mistake, as should he fail to set them properly the belt conveyor would fail to work.

Further, the scale beams are connected electrically by a mercury bath, so that the instant the beam tips the feed is stopped.

The weights are fixed by the chemist, the scales set and our mixtures are made to the pound, with no possibility of mistake, so that our composition is always absolutely uniform.

The rest of the process is simple. We **grind our raw materials more finely** before burning than is done at other mills, and consequently get a more **uniform** clinker. This finer grinding is possible because **Edison patented rolls** give a much finer product with the same horsepower than any other grinding systems.

We use the **longest kilns in the world,** and get more uniform burning. Others are copying our kilns, which shows their merit.

FINE GRINDING OF PORTLAND CEMENT

We grind 10 per cent. finer than any of our competitors. That is, 10 per cent. more will pass a 200-mesh sieve, *i.e.*, 40,000 meshes to the square inch.

Why do we grind finer? **Because all authorities agree that fine grinding improves the quality.**

EMINENT AUTHORITIES ON THE IMPORTANCE OF FINE GRINDING OF PORTLAND CEMENT

Homer A. Reid, Assoc. M. Am. Soc. C. E., Assistant Engineer, Bureau of Buildings, New York City, author of a scientific Manual just issued and published by The Myron C. Clark Publishing Co., New York, entitled, "Concrete and Reinforced Concrete Construction" under Fineness, says:

"*Fineness.*—The finer a cement is ground, the better its quality. Water acts only on the finer particles, while the coarser particles are almost always inert. The finer a cement is ground the greater will be its covering capacity, therefore, the greater its value as a cementing material. To produce the greatest strength each particle of the aggregate should be covered with cementing material. The greatest economy, other things being equal, will result when the cement is as fine as possible. However, while fine cement is more valuable than coarse, fine grinding increases the cost of manufacture, hence there is a limit to the amount of grinding which can be done economically. *Again, a finely ground cement is less apt to blow* or *disintegrate than a coarse one*, since the free or loosely combined lime being in fine particles is thoroughly broken up and readily rendered innocuous by the water when it is added."

The U. S. Navy Department Specifications for Cement, issued June 12, 1905, reads:

"Neat tests are of less value than those of the briquettes made with sand and cement. The fineness of the cement is important, for the finer it is the more sand can be used with it."

James Knox Taylor, Supervising Architect, U. S. Treasury Department, Washington, D. C., in his Specifications penalizes cements running under Standard fineness, as follows:

"The standard of fineness shall be that 92 per cent. by weight shall pass a 100-mesh sieve and 75 per cent. shall pass a 200-mesh sieve. If the material does not meet these requirements as to fineness it will be either rejected or the contractor will be required to use 2 per cent. additional for each one per cent. drop below the 92 per cent. limit, or 3 per cent. additional for each 1 per cent. drop below the 75 per cent. limit."

Professional Papers, No. 28, Corps of Engineers, U. S. Army, War Department, reads:

"It is only the impalpable dust that possesses cementitious value. *Fineness of grinding* is therefore an *essential quality* in cements to be mixed with *sand.*"

"Standard Methods of Testing and Specifications for Cement," American Society for Testing Materials, reads:

"It is generally accepted that the coarser particles in cement are practically inert, and it is only the extremely fine powder that possesses adhesive or cementing qualities. The more finely cement is pulverized, all other conditions being the same, the more sand it will carry and produce a mortar of a given strength."

Taylor—"Practical Cement Testing," reads:

"The fineness of the material is a measure of its cementing value, and a fine cement accordingly, will be much stronger when mixed in a mortar, or can be mixed with a larger proportion of sand than a coarse one and yet attain the same strength."

"Most important of all, however, is the fact that with finer grinding the liability to unsoundness becomes less, since the small particles become seasoned more quickly and the expansive elements thus become inert."

Eckel—"Cements, Limes and Plasters," says:

"*The tendency among engineers at present is to demand more finely-ground cement.* While this demand is doubtless *justified by the results of comparative tests of finely and coarsely-ground cements*, it must be borne in mind that any increase in the fineness of grinding means a decrease in the product per hour of the grinding mills employed and a consequent increase in the cost of cement."

"The strength of the cement, and particularly its tensile strength when mixed with sand, increases with the fineness."

"The value of fine grinding is evident, and engineers are constantly raising the standard of fineness in specifications."

Dr. Rudolf Dyckerhoff—"Tonindustrie-Zeitung," says:

"Higher strength can only be effected by finer grinding."

Thomas A. Edison, says: "THE FINER THE CEMENT THE MORE WATER IT WILL ABSORB, AND BEING MORE LIQUID, WILL FLOW BETTER AND PREVENT SEGREGATION OF THE AGGREGATES."

Prof. A. Marston, Director of Engineering Experiment Station, Iowa State College, says:

"The fineness of grinding of cement is of especial importance in enabling it to take a large proportion of sand in mortar. In fact, only the very fine particles of cement really have much cementing value. The coarser particles act more like sand than cement."

Candlot—"Ciments et Chaux Hydrauliques," says:

"If one considers that he must pay the cost of transportation. often considerable, to no purpose, and that to limit the economy to its most simple expression, one is able to replace upon the work this same quantity of cement without value by sand, one recognizes that the improvement in grinding constitutes a very important advance in the manufacture of cement."

"In trying the strength of a mixture of cement and sand, one has readily recognized how much the energy of the cement increased in proportion as it is ground more finely. As cements are always used with the addition of sand, one endeavors then to grind to a fine powder all the grains which before remained inert and without value. If the expense necessitated by the grinding is greater than formerly, one is at least assured that he does not deliver to the consumer 20 to 30 per cent. of inert matter."

C. H. Smith, C. E.—"The Canadian Engineer." says:

"The manufacturers are alive to the value of fine grinding and are making steady progress."

"Fineness is one of the most valuable characteristic qualities a cement can possess. The finer grinding the better."

Spalding—"Hydraulic Cement," says:

"The finer the cement the larger the quantity of sand that may be legitimately used with it. The coarser particles of cement are to be considered as inert material, or practically as a certain amount of sand already mixed with the cement."

Sabin—"Cement and Concrete," says:

"*Importance of fineness.*—The fineness of cement is always conceded to be one of its most important qualities, and the determination of fineness is omitted in none but the very crudest tests."

"Fine grinding improves Portland Cement in two-fold degree, by bringing into action the best burned clinker and by rendering a given *weight* of cement capable of coating a larger number of sand grains."

L. Golinelli—"Das Kleine Cement-buch," says:

"As to fineness of grinding, it may be mentioned that the coarser particles of cement act like so much sand. The finer the grinding the more sand can be used with the cement."

John Newman—"Notes on Concrete and Works in Concrete." says:

"All coarse particles, *i. e.*, small lumps of cement in an unground or *partially ground* state, should be removed, as they do not set together and are little better than sand."

R. K. Meade, American Society for Testing Materials:

"Increasing the fineness from 80 to 85 per cent. increases the 7 day sand test 21 per cent. The increase on the 28 day sand tests due to fine grinding are even larger."

"That the neat strength is lowered by fine grinding."

"That the sand strength is increased by fine grinding."

D. B. Butler—"Portland Cement," says:

"The same series of experiments also demonstrated very clearly that free lime (or whatever the destructive agent may be), contained within the *coarse particles* is chiefly responsible for the *unsoundness* of cement."

Prof. Gary—"Tonindustrie-Zeitung," says:

"It is known that a hydraulic material is more active the finer it is reduced. But fine grinding meets technical difficulties and is costly."

Dr. H. E. Kiefer—"Edison Portland Cement Co." says:

"Cement is a mineral glue. A joiner presses out the excess of glue as he requires just enough for an even coating. Portland Cement is just the same—an even coating is all that is required. Finely ground cement has the covering qualities.

"Sand is an indispensable ingredient of good concrete, but it is not necessary to introduce it into the mixture as part of the Portland Cement. It is cheaper to buy it as sand than as residues in the cement."

"A few years ago 15 per cent. was permitted as a maximum residue on a 100 mesh sieve. Now the usual maximum allowable is 8 per cent. Why? The importance of fine grinding is recognized everywhere."

Faija and Butler—"Portland Cement for Users," says:

"The importance of fine grinding cannot be overestimated."

"Independently therefore of the power of amalgamating with and surrounding each particle and aggregate of a concrete, *fine grinding* materially improves the quality of the cement itself."

Redgrave—"Calcareous Cements," says:

"All recent investigations in Germany and England demonstrate the importance of fine grinding."

Residues remaining on a standard 200-mesh sieve.

Residues remaining on a standard 100-mesh sieve.

FINE GRINDING IS THE SECRET OF QUALITY.

The above illustration represents tests made on five different leading brands of Portland Cement. Samples of each were bought in the open market and sieving tests made as above. The vials show the actual relative proportions of residues in the various samples as equal weights of each were taken.

In four of the brands the residue on a No. **100 SIEVE** was from 4.2 to 6.6 per cent. In the fifth, namely, Edison, it was only 1.2 per cent.

In four of the brands the residue on a No. **200 SIEVE** was from 23.0 to 24.5 per cent. In the fifth brand, namely, Edison, it was only 15.0 per cent.

FINE GRINDING OF PORTLAND CEMENT
AND WHAT IT MEANS

FOR a proper understanding and full appreciation of the importance of fine grinding, it is necessary to explain that Portland Cement (as manufactured in the Lehigh Valley) is made from what is commonly understood as "Cement Rock," with the addition of sufficient limestone to give the necessary amount of lime. The rock is broken down and then ground to a fineness of 80 to 90 per cent. through a No. 200 screen. This ground material passes through kilns and comes out in clinker. This is ground and ***that part of this finely-ground clinker that will pass a No. 200 screen (40,000 meshes per square inch) is Cement,*** the residue is still clinker. These coarse particles or clinkers absorb water very slowly, are practically inert, and have very feeble cementing properties. ***The residue on a No. 100 screen is useless.***

Edison Portland Cement is ground 85 per cent. through a No. 200 screen—10 per cent. finer than other brands. This can be verified in any laboratory.

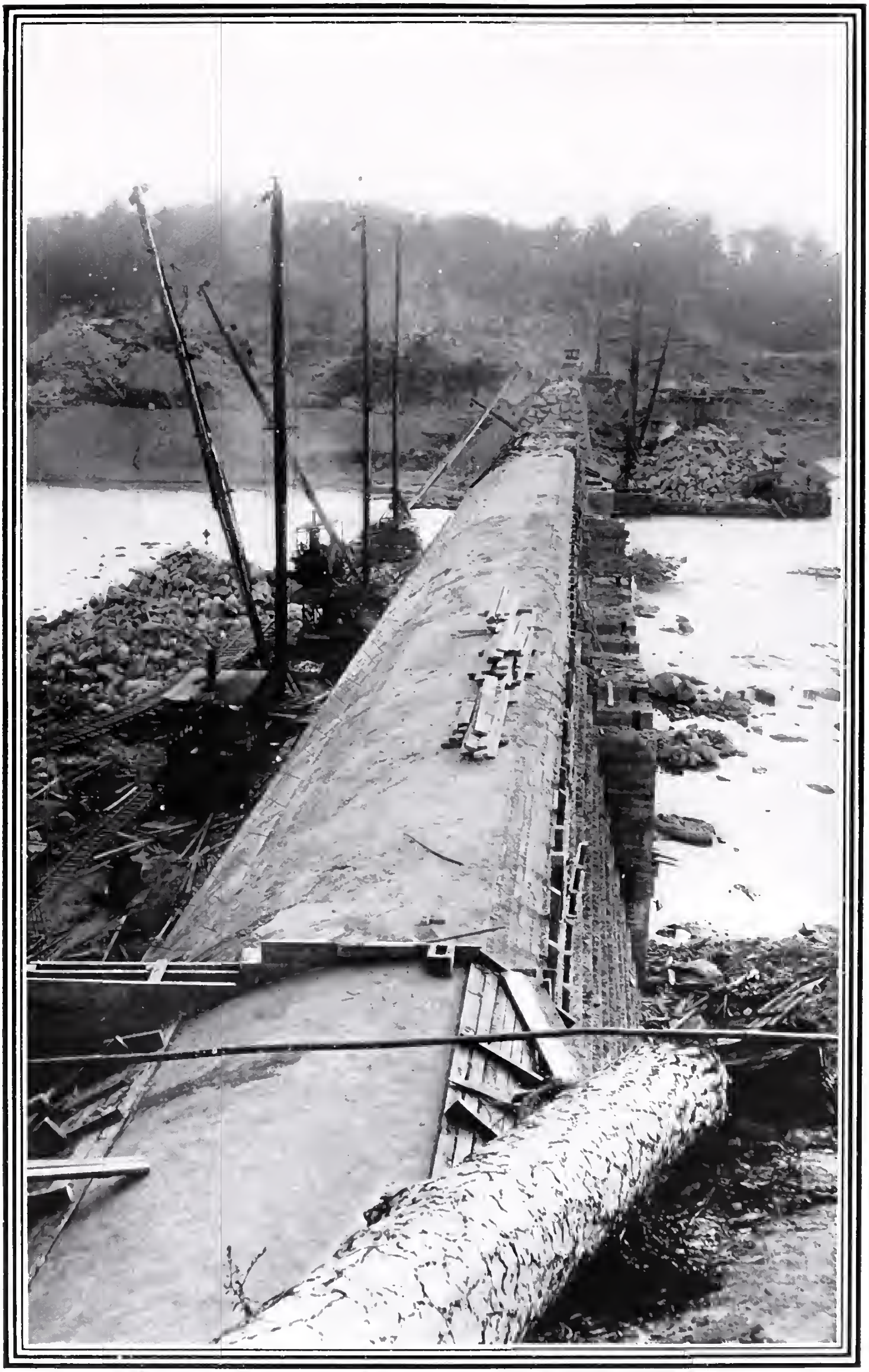
In a barrel of Edison Portland Cement therefore you get 85 per cent. of Portland Cement and 15 per cent. of clinker. In a barrel of other brands you get 75 per cent. of cement and 25 per cent. of clinker.

If you are buying a ton of coal, would you buy the coal containing 25 per cent. of slate, or would you prefer the coal containing but 15 per cent. of slate?

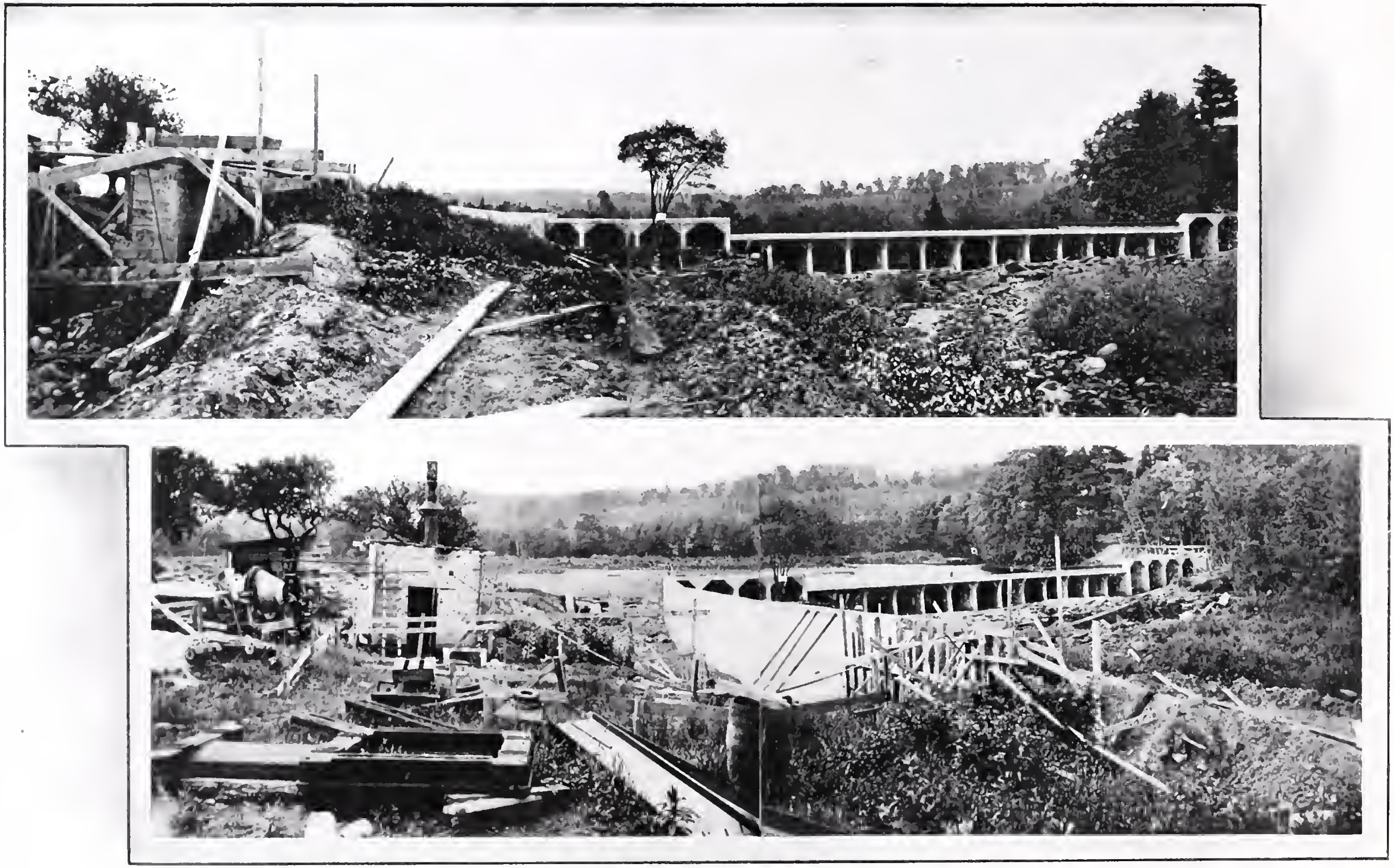
If, instead, you are buying iron ore, would you not give preference to ore that contained 10 per cent. more units of iron?

Another point is worth considering and that is that the Edison Portland Cement Company makes but one brand or quality, ***and that is the best.***

Southern Power Company's (solid) dam and power house at Great Falls Station in South Carolina.
40,000 horse power installation. W. S. Lee, Chief Engineer.
"Edison" used exclusively—80,000 barrels.



Southern Power Company's (solid) dam and power house at Rocky Creek Station, South Carolina. 40,000 horse power installation. W. S. Lee, Chief Engineer. 100,000 barrels of "Edison."



THE LITTLE ANDROSCOGGIN WATER POWER COMPANY'S (HOLLOW) DAM, AUBURN, ME.

An average height of twenty-nine feet, maximum of forty-eight feet; length, two hundred feet. The work was commenced on September 10, 1907, and finished January 17, 1908. It was designed by I. W. Jones, Engineer, Milton, N. H. The Cement worked perfectly. (Signed), Aberthaw Construction Co.

"Edison" used exclusively—3,429 barrels.

BARRE WOOL COMBING CO.'S (HOLLOW) DAM, BARRE, MASS.

This dam is 14 feet high at the spillway and 17 feet 6 inches on the wing wall. Total length 189 feet and spillway 116 feet. The dam contains 388 yards of concrete reinforced with twisted square steel bars and what is known as the Ransom Hollow Dam Patent.

Contractors, Rhode Island Contracting and Engineering Co., Providence, R. I.

"Edison" Portland Cement used exclusively.

FORT HALIFAX POWER COMPANY'S (SOLID) DAM AND POWER HOUSE, WINSLOW, ME.

Maximum height, 30 feet. Length of spillway, 350 feet. Especially designed to occasionally resist submersion. Sellers & Rippey, Philadelphia, Engineers and Architects. Five hours after last concrete was put in, two feet of water went over the dam.

"Edison" used exclusively—about 12,000 barrels.

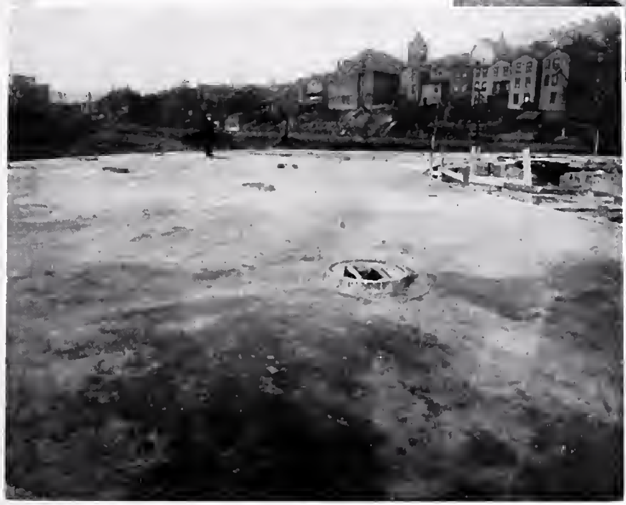
Sept. 5, 1907. The Kaministiquia Power Co., Kakabeka Falls, Ontario, Canada. S. Curve of Aqueduct No. 2, looking towards Intake.

Sept. 5, 1907. The Kaministiquia Power Co. Dam at Kakabeka Falls, Ontario. End view of Aqueduct No. 2.

11,000 barrels of Edison Cement used.

WINDOM RESERVOIR, ORCHARD PARK, N. Y.

Constructed by Field, Barker & Underwood, Philadelphia, for American Pipe Mfg. Co. The Reservoir is 415 feet in diameter; depth, 16 feet: capacity, 12,000,000 gallons; concrete slope, 12 inches thick; floor, 3 inches thick —Edison Cement used exclusively—2,040 barrels.



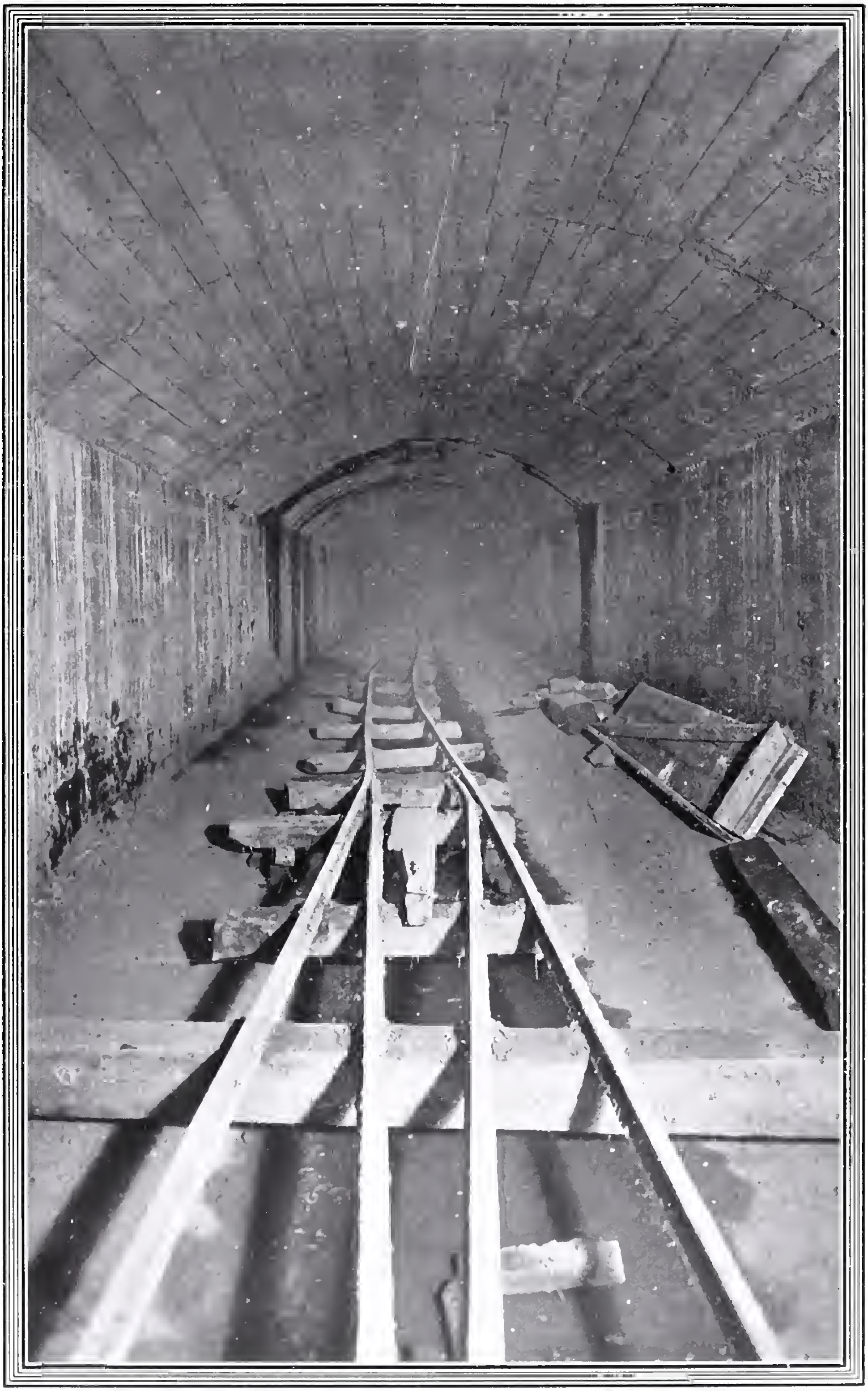
FILTRATION PLANT AT McKEESPORT, PA.

Capacity 6,000,000 gallons daily.
Bowman Bros. Company, McKeesport, Pa., Contractors.

"Edison" used exclusively—10,000 barrels.
Alexander Potter, Chief Engineer.

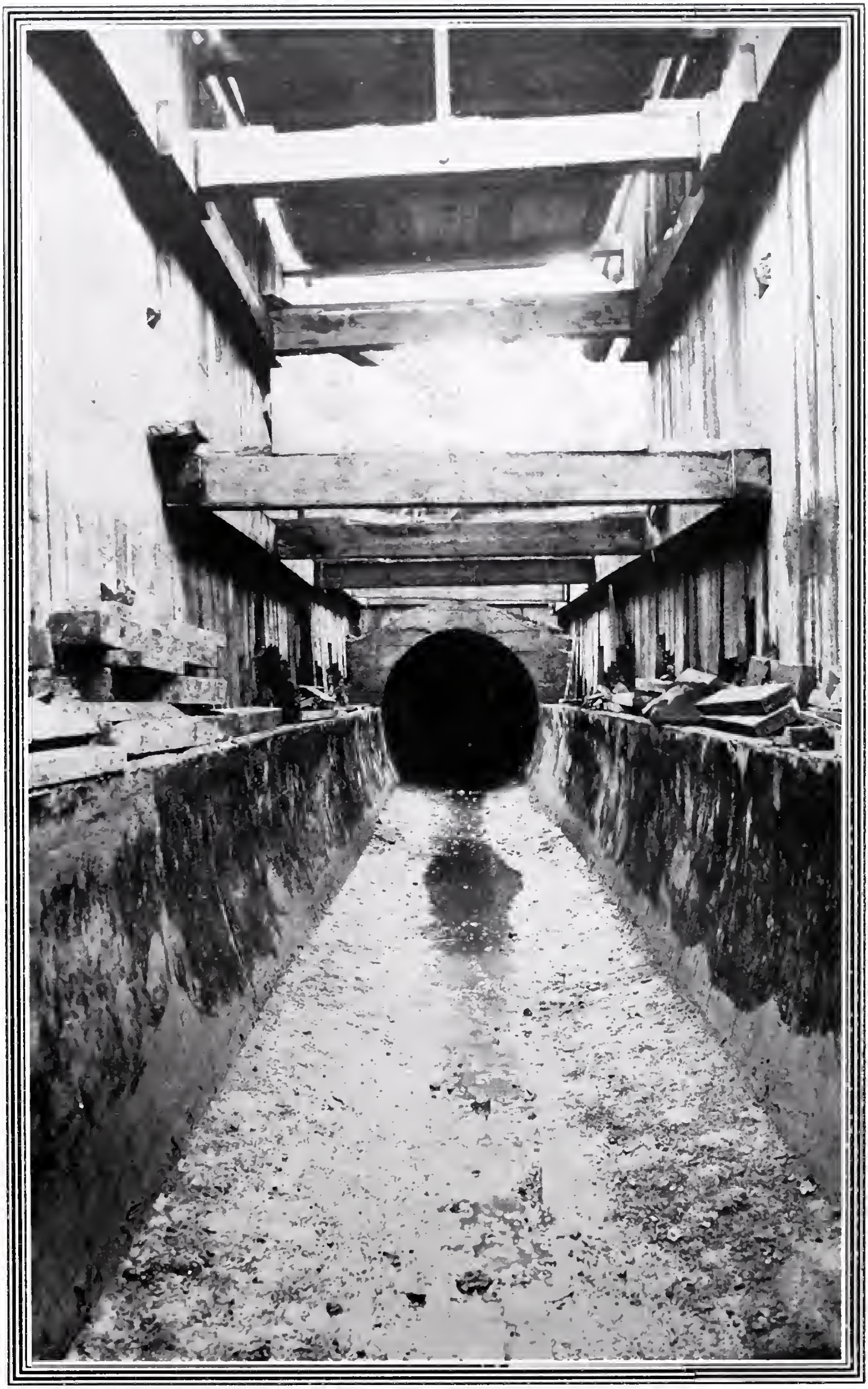
FILTRATION PLANT, CITY OF PHILADELPHIA.

About 10,000 barrels of "Edison" were used on this work.



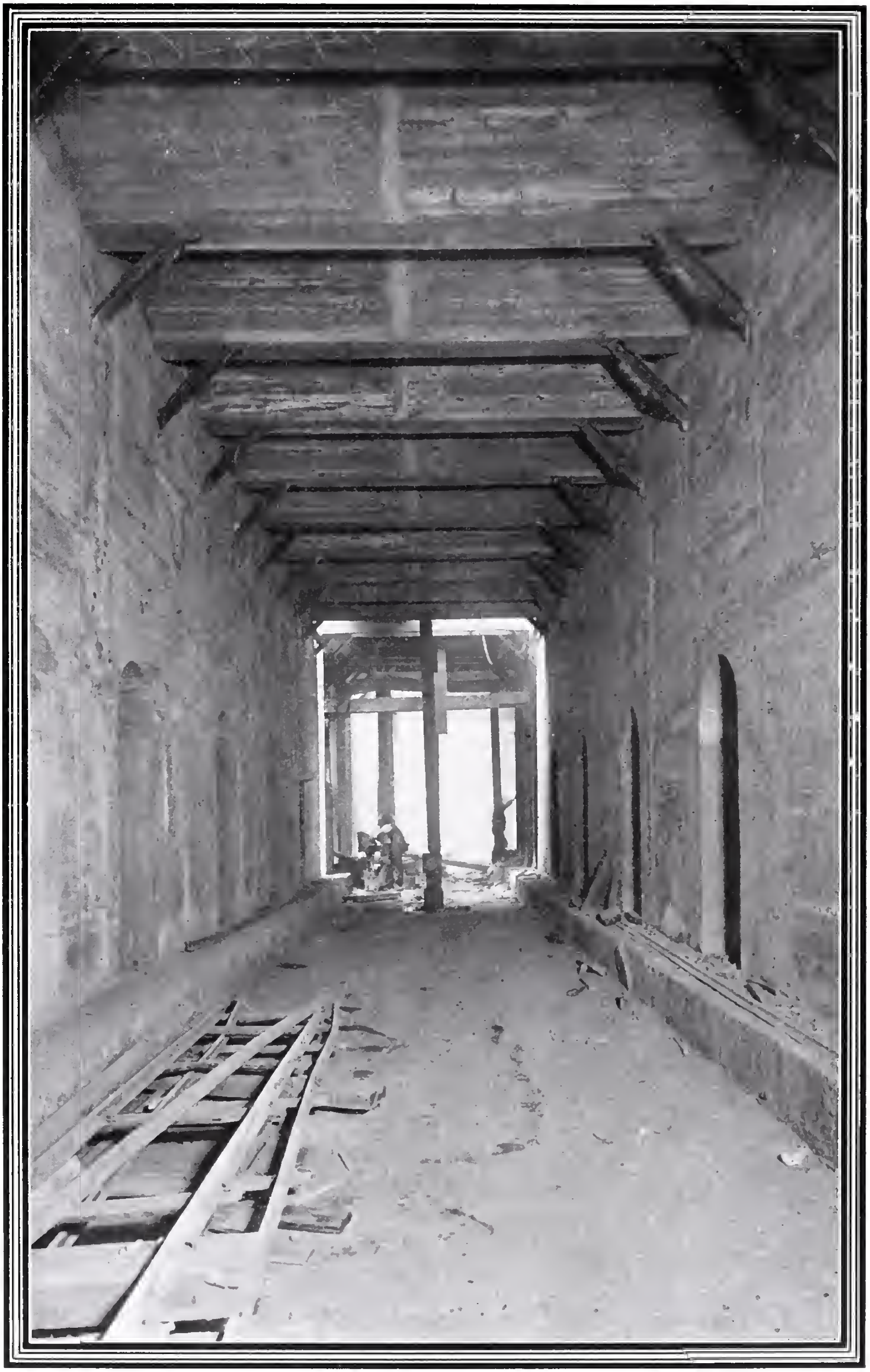
THE BRONX STORM RELIEF TUNNEL SEWER, NEW YORK CITY

This is the largest concrete sewer in the world; its dimensions being 11 feet wide by 11 feet 9 inches high; length, 6,900 feet (5,700 feet of which is tunnel). The thickness of the walls is from 12 inches to 18 inches, reinforced concrete. Approximately 30,000 cubic yards of concrete. The capacity is 1,352 cubic feet per second. "Edison" Portland Cement used exclusively on this work. Williams Engineering and Contracting Co., New York City, contractors.



CONCRETE SEWER, BRIGHTON, MASS.

Length 2,440 feet. Inside measurement, 4 feet by 6 feet; 18 inch concrete on side walls. Metropolitan Water and Sewerage Board. Wm. M. Brown, Chief Engineer. C. J. Jacobs & Co., Contractors. "Edison" Portland Cement used exclusively.



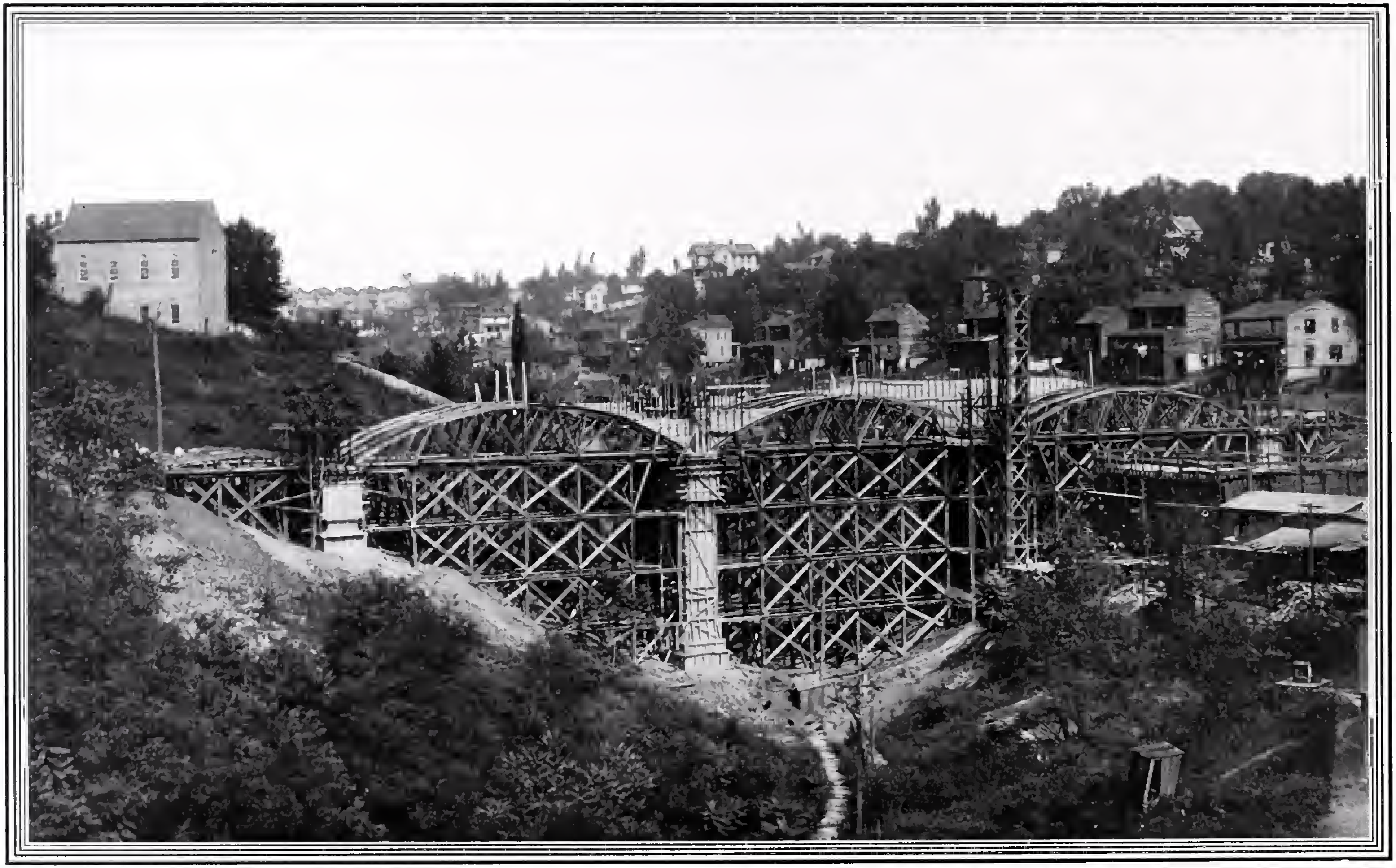
Section of Underground Tunnel from bridge loop connecting Brooklyn Bridge and Williamsburg Bridge, New York City. Bradley Contracting Company, Contractors. 150,000 Barrels "Edison" going into this work.

ICE PIER IN OHIO RIVER AT GALLIPOLIS, OHIO, CONSTRUCTED BY UNITED STATES GOVERNMENT.

This ice pier is a concrete structure resting on a formation of gravel. The superstructure of pier is 54.92 feet long and 24.83 feet wide at top of foundation. The upstream cutting edge has an inclination of 5 horizontal to 6 vertical, with edges meeting at an angle of 90 degrees (in a horizontal plane). The base of pier proper is at an elevation of 4.5 feet above low water and the top 34 feet above the base. The pier on top has an extreme length of 28 feet and a width of 22 feet. The downstream corners are rounded with a radius of 6 feet, and the junction of the planes extending back from cutting edge with the side planes, is effected by corners having a radius of 8 feet. The total quantity of concrete in base and superstructure, including large rock buried in the concrete, is 1,657 cubic yards. The weight of iron work, including the cutting edge of ½-inch steel plate reinforced with 3-inch by 3-inch angle, mooring rings, etc., is 7,010 pounds. "Edison" Portland Cement was used in the pier throughout,—a total of 1,608 barrels.

LOCK AND DAM NO. 12, KENTUCKY RIVER, IRVINE, KY.

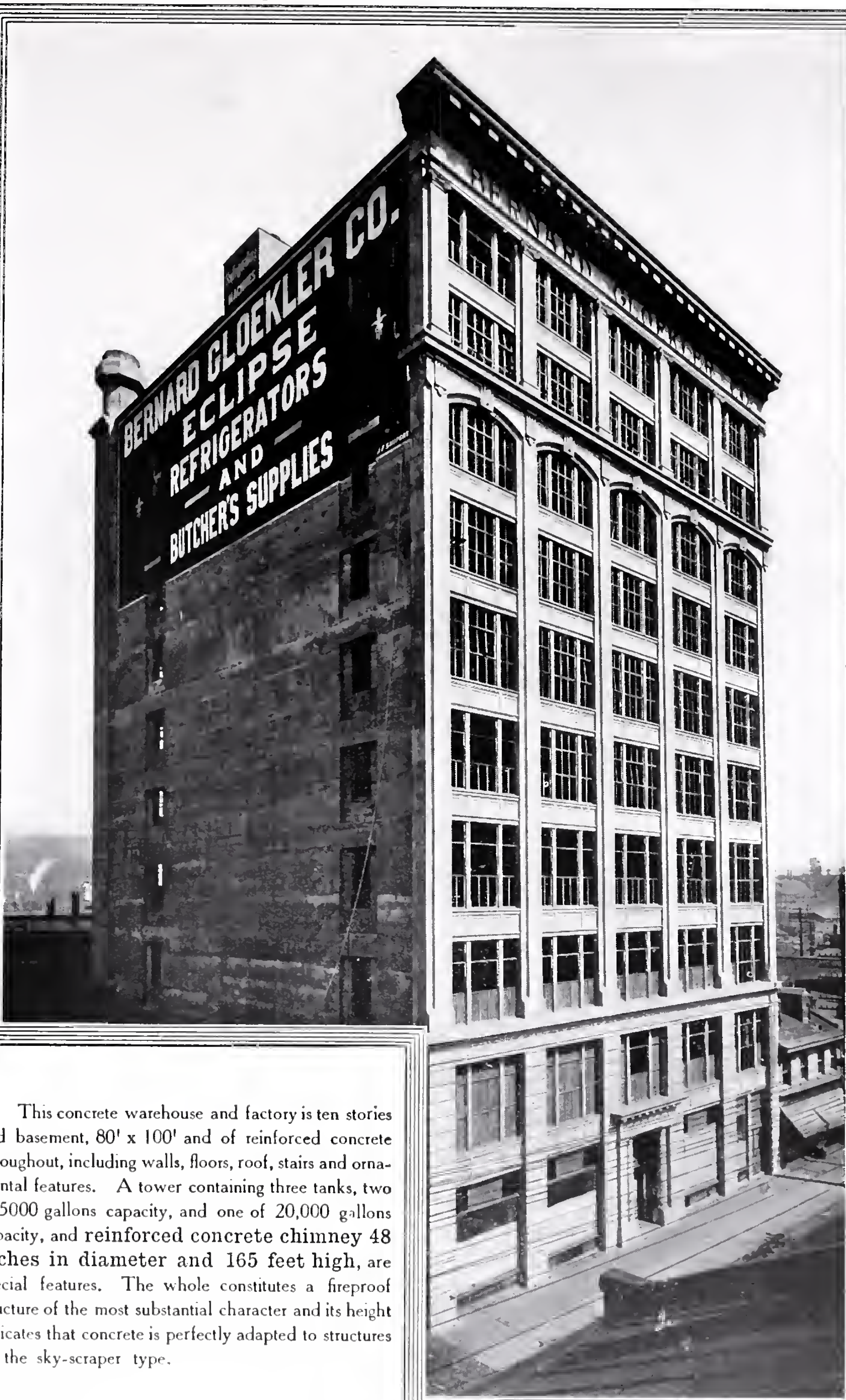
United States Government Work. Ohio River Contract Company, Evansville, Ind., Contractors.
15,000 barrels of "Edison" Cement used on this work.



D STREET VIADUCT AT LYNCHBURG, VA.

H. L. Shaner, Engineer. Faragher Engineering Company, Contractors. J. H. Fuertes, Consulting Engineer.

About 8,000 barrels of "Edison" will be used.



This concrete warehouse and factory is ten stories and basement, 80' x 100' and of reinforced concrete throughout, including walls, floors, roof, stairs and ornamental features. A tower containing three tanks, two of 5000 gallons capacity, and one of 20,000 gallons capacity, and reinforced concrete chimney 48 inches in diameter and 165 feet high, are special features. The whole constitutes a fireproof structure of the most substantial character and its height indicates that concrete is perfectly adapted to structures of the sky-scraper type.

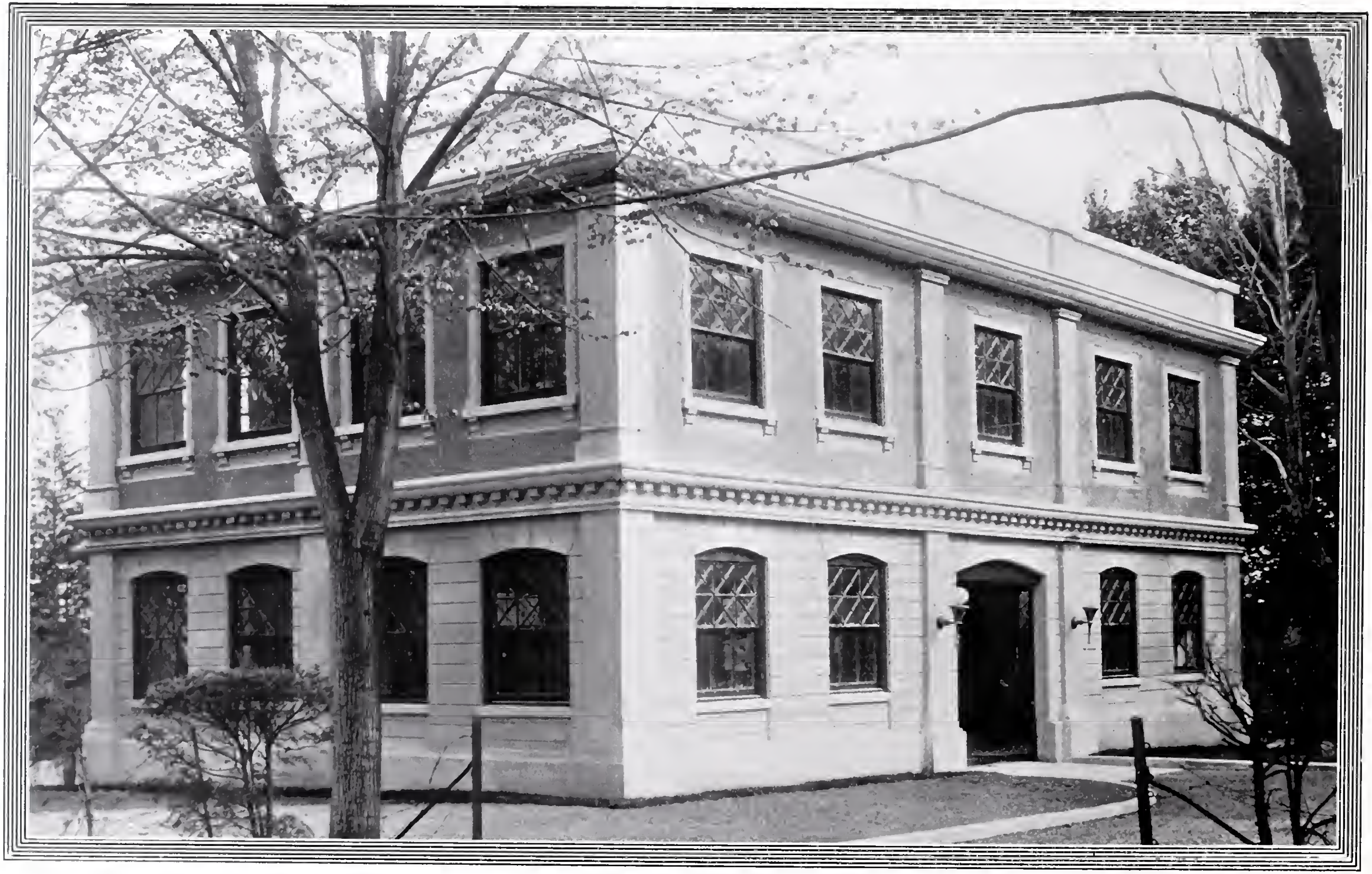
BERNARD GLOEKLER BUILDING, PITTSBURG, PA.
Ballinger & Perrot, Engineers and Architects, Philadelphia, Pa.
Reinforced concrete throughout, including roof.
10,000 barrels Edison Portland Cement used.

THE W. H. SWEENEY MANUFACTURING COMPANY'S BUILDING, 66 Water St., Brooklyn, N. Y.

This building is 115 ft. by 132 ft., to be 10 stories high and is reinforced concrete throughout, including foundations, floors, walls, stairs and roof, and is being erected by the W. H. Sweeney Manufacturing Company. H. I. Moyer Engineering & Construction Company, Supervising Engineers.

Edison Portland Cement used exclusively—about 9,000 barrels.

THOMPSON & NORRIS CO.'S BUILDING, Concord and Prince Sts., Brooklyn, N. Y.
First reinforced concrete factory in Brooklyn, constructed in 1904.
Horace I. Moyer & Co., Engineers.



CONCRETE GARAGE, LLEWELLYN PARK, N. J.

"Edison" used exclusively.

HENRY C. LEE GARAGE, 227-237 N. Broad St., Philadelphia, Pa.

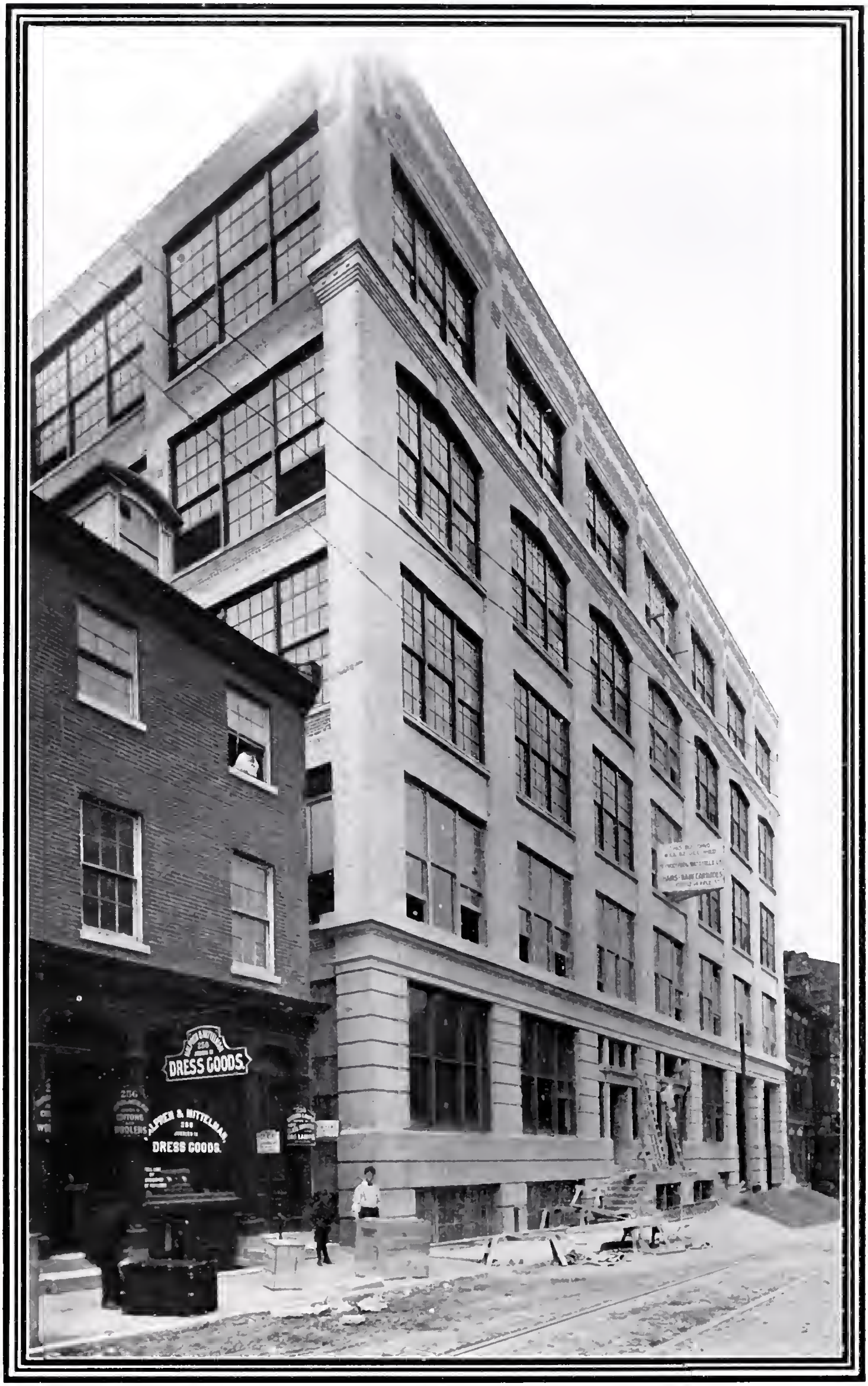
This garage is 110 ft. by 120 ft., and is reinforced concrete throughout, including foundation and roof, with the exception that the two stories front have a curtain wall of brick. Wm. Steele & Sons Co., Contractors, Philadelphia, Pa. Watson & Huckel, Architects.

Edison Portland Cement used exclusively—3,000 barrels.

RETAINING WALLS ON M. & E. DIVISION D. L. & W. R. R., SUMMIT, N. J.

"Edison" used exclusively.

F. BERG & CO., ORANGE, N. J.
Reinforced concrete throughout, including the roof.
H. I. Moyer & Co., Engineers and Contractors, Brooklyn, N. Y.
"Edison" used exclusively—3,000 barrels.



HEYWOOD BROS. & WAKEFIELD BUILDING, 5th St. below Locust, Philadelphia, Pa.

This building is 200 x 117 feet deep, five stories with basement. Reinforced concrete skeleton construction with brick curtain wall spandrels, with exception of front, which is faced with light gray brick and terra cotta band courses, sills and window arches. Floors consist of reinforced concrete beam, girder and slab construction supported by reinforced concrete columns, designed for heavy manufacturing purposes. Roof is covered with slag. Ballinger & Perrot, Architects, Philadelphia. Moore & Co., Contractors, Philadelphia. Edison Portland Cement used exclusively—about 9,000 barrels.

POWER HOUSE, CENTRAL PENNSYLVANIA TRACTION CO., HARRISBURG, PA.

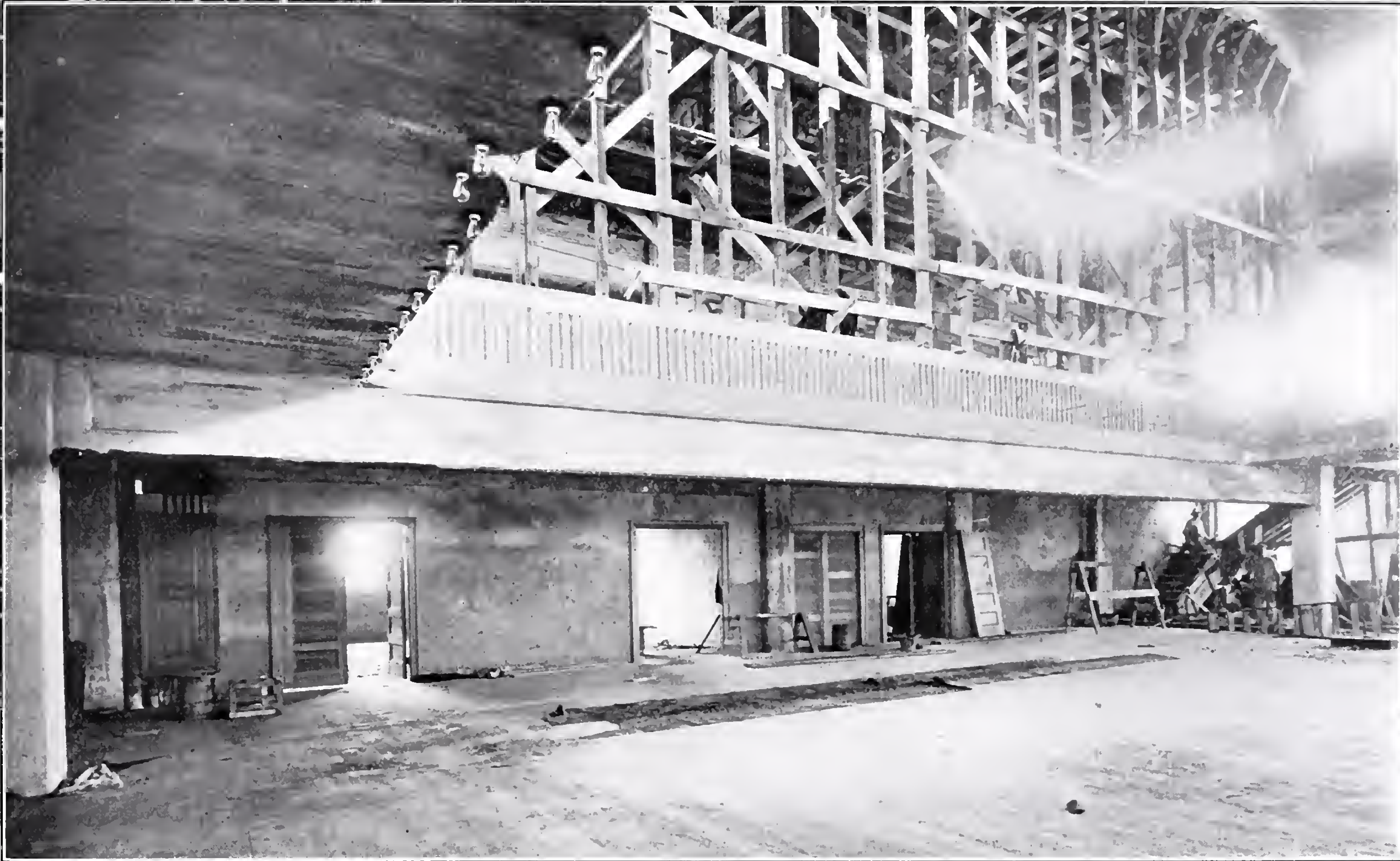
C. Howard Lloyd, Architect. Mason D. Pratt, Engineer.

"Edison" used exclusively.

CASINO AT SULZER'S HARLEM RIVER PARK, 126th St. and 2d Ave., New York.

Dimensions: Length, 205 feet; width, 120 feet; height above ground, 44 feet. The building has a basement containing a shooting gallery, bowling alleys, wine cellars and other rooms for storage. First floor consists of dining room, kitchens, offices, etc. Second floor, large ball room, committee rooms and reception rooms. Third floor, hotel rooms, ball room, balconies and open air promenade. Top of the building is given over entirely to a large roof garden. Reinforced concrete throughout—walls, floors, beams, roofs and decorative mouldings. Clement B. Brun, Supervising Architect. Grossman & Proskauer, Consulting and Contracting Engineers.

"Edison" used exclusively.



BALL ROOM, SULZER BUILDING.

The above shows roof spans of 60 feet, unsupported. The building was started March 16th, '08, and the roof concrete work completed May 3d, '08. The Building was opened May 29th, '08. The floors were stripped one week after pouring of concrete; the roof, on account of its 60 ft. clear spans, after two weeks. This building contains 3,500 yards of reinforced concrete.

C. R. MACAULAY BUILDING, 18th St., near 5th Ave., Brooklyn, N. Y.

Building 100 x 100 feet, reinforced concrete throughout. Bertin & Sons, Engineers.

"Edison" used exclusively—4,000 barrels.

NEW BUILDING, NEW YORK ATHLETIC CLUB, TRAVERS' ISLAND, N. Y.

Main entrance, reinforced concrete floors and roof, stucco finish. Main entrance overlooking New York Athletic Club Field. G. K. Thompson, Architect, 66 Broadway, New York. Isaac A. Hopper & Son, Inc., Contractors, New York City.

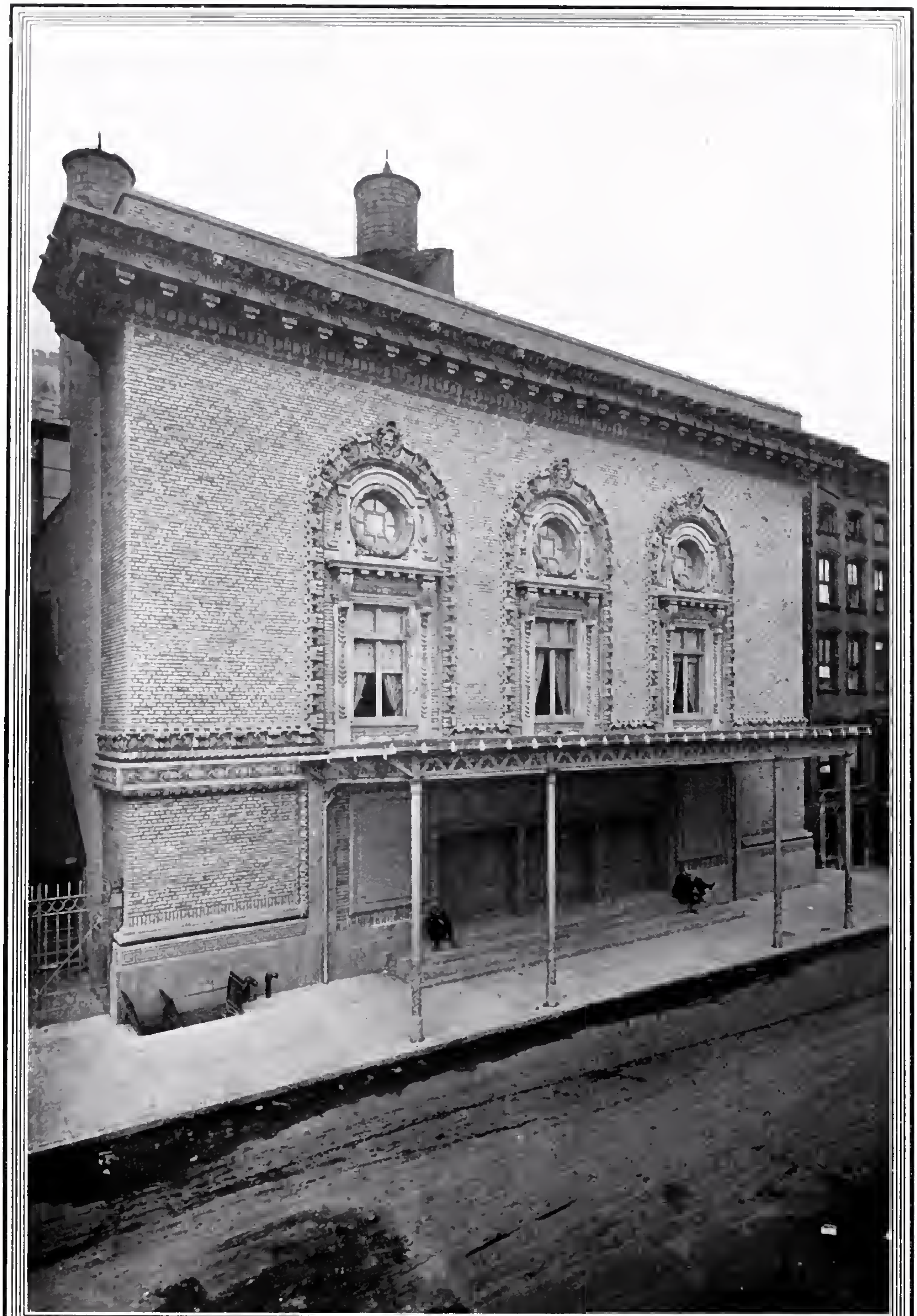
"Edison" used exclusively.

NEW YORK EDISON CO., NEW WATER-SIDE STATION, 41st St. and East River, N. Y.

Isaac A. Hopper & Son, Contractors for foundation. Drawings and plans by their own staff of architects and draftsmen. Part of 50,000 barrels used in the foundations, balance in their New York City Subway.

Manhattan Bridge Anchorage, Pike Street Slip, New York; 35,000 barrels Edison Cement used. Williams Engineering and Contracting Co. Plans, Department of Bridges, New York.

C. R. R. of N. J. Piers, Nos. 10-11, North River; reinforced floors and platform. Pier 600 feet long, 100 feet wide, under the supervision of the C. R. R. of N. J. Engineers. 160 feet of sea wall put in place during the month of January, 1907, salt water work. Henry Steers, Contractor, New York.

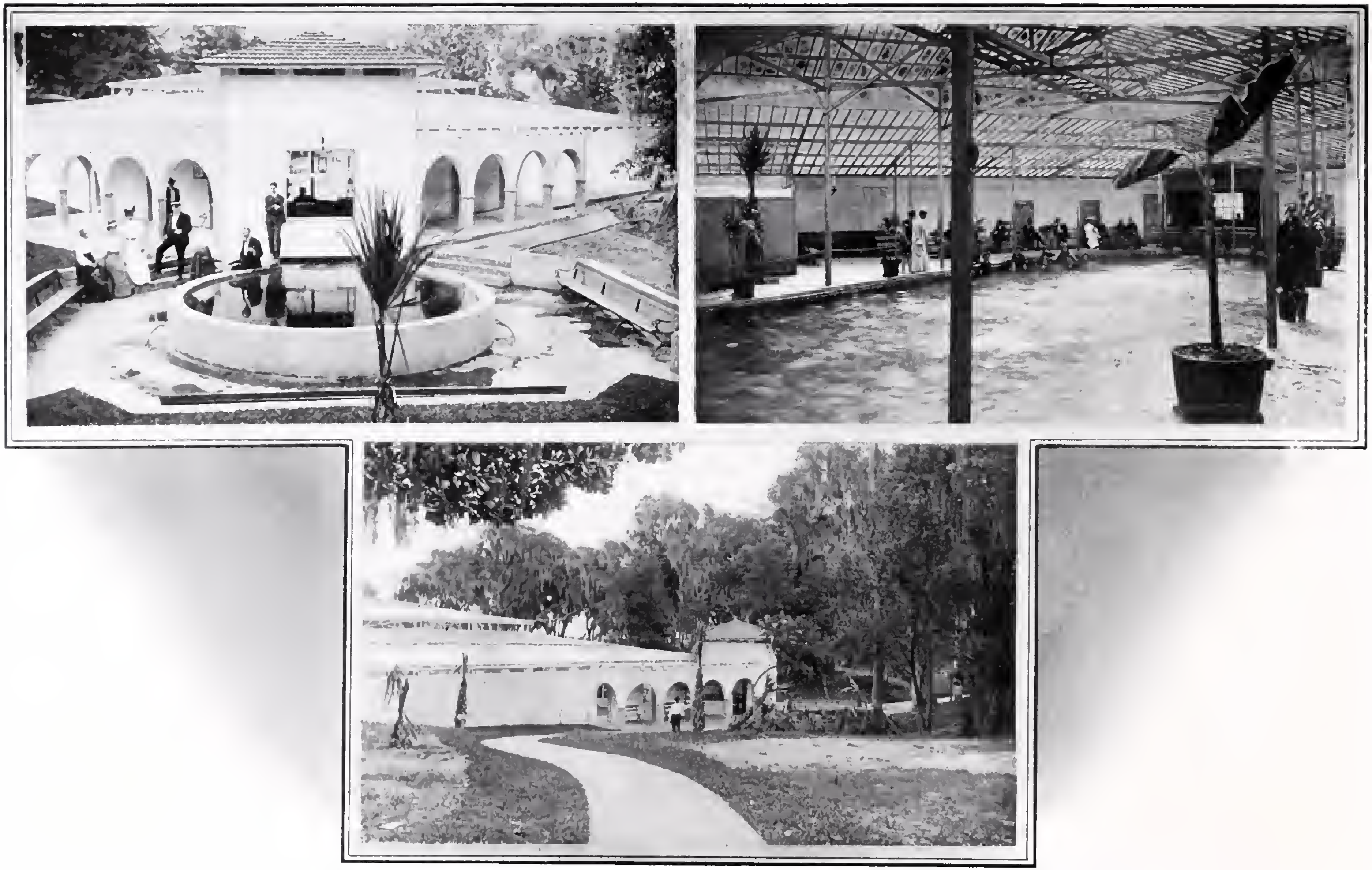


GAIETY THEATRE, 46th and Broadway, New York.
46th and Broadway Realty Co., Contractors. Herts & Tallant, Architects.
"Edison" used exclusively—8,000 barrels.

DEAL BEACH CASINO.

Reinforced concrete throughout. "Edison" Cement used exclusively.

Westlecraft & Son, Contractors, Bernardsville, New Jersey. David Ach, Architect.



"QUISISANA" SPRING AND CASINO, GREEN COVE SPRINGS, FLORIDA.

Designed and erected by Louis H. McKee, Trenton, New Jersey.

Edison Portland Cement used exclusively.

B. & O. R. R. PIER, No. 7, NORTH RIVER.

Built by Henry Steers, Contractor, New York, under the supervision of the Engineers of the C. R. R. of N. J.

Reinforced floors, stairs and walls. "Edison" used exclusively.

MERCHANTS REFRIGERATING COMPANY'S BUILDING, 27 N. MOORE STREET, NEW YORK CITY.

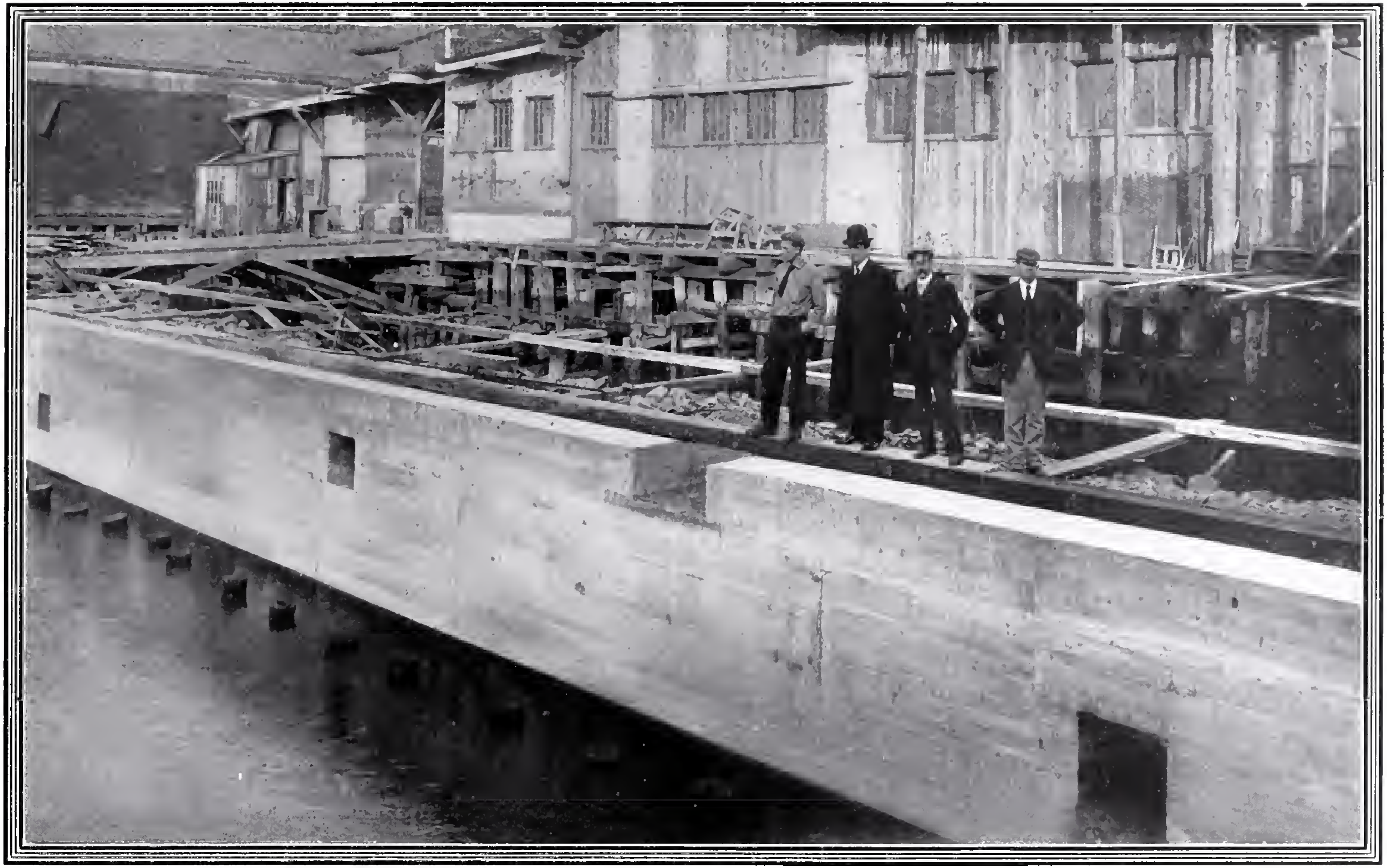
Reinforced concrete floors and roof, arches and girder covering. 7,000 barrels "Edison" Cement used.

National Fire Proofing Co., Contractors. Wm. H. Birkmire. Architect.

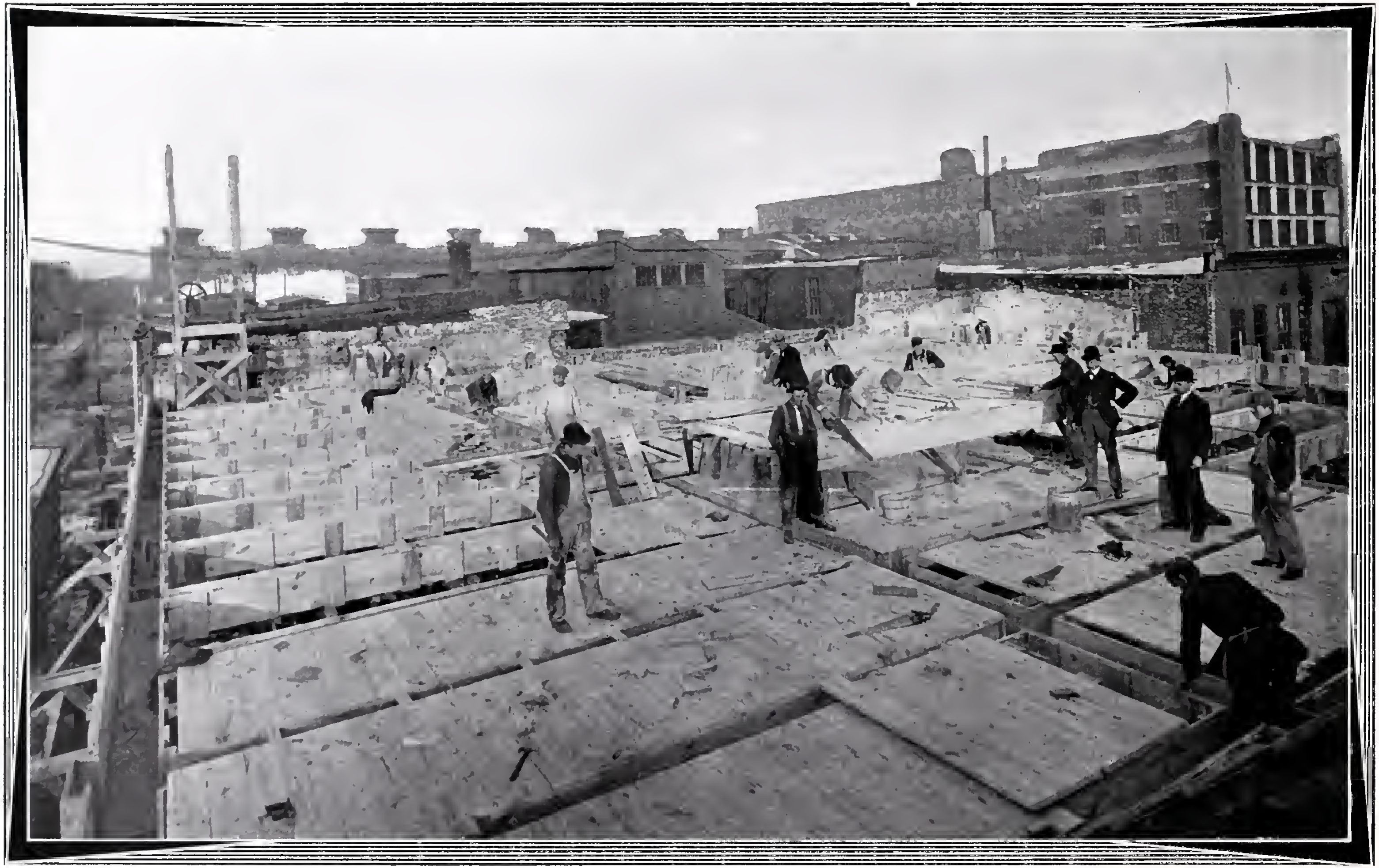
JAECKEL BUILDING, 10-20 W. 32d STREET, NEW YORK CITY.

Modern fireproof, 11 story and basement building; walls, floors, arches and pillars reinforced concrete.

National Fire Proofing Co., Contractors.
Clinton & Russell, Architects.
4,000 barrels "Edison" used.



Portion of Sea Wall, 160 feet in length, C. R. R. of New Jersey, Piers Nos. 10 and 11 North River.
Constructed by Henry Steers, Contractor, under the supervision of the C. R. R. of N. J. Engineers.
"Edison" used.



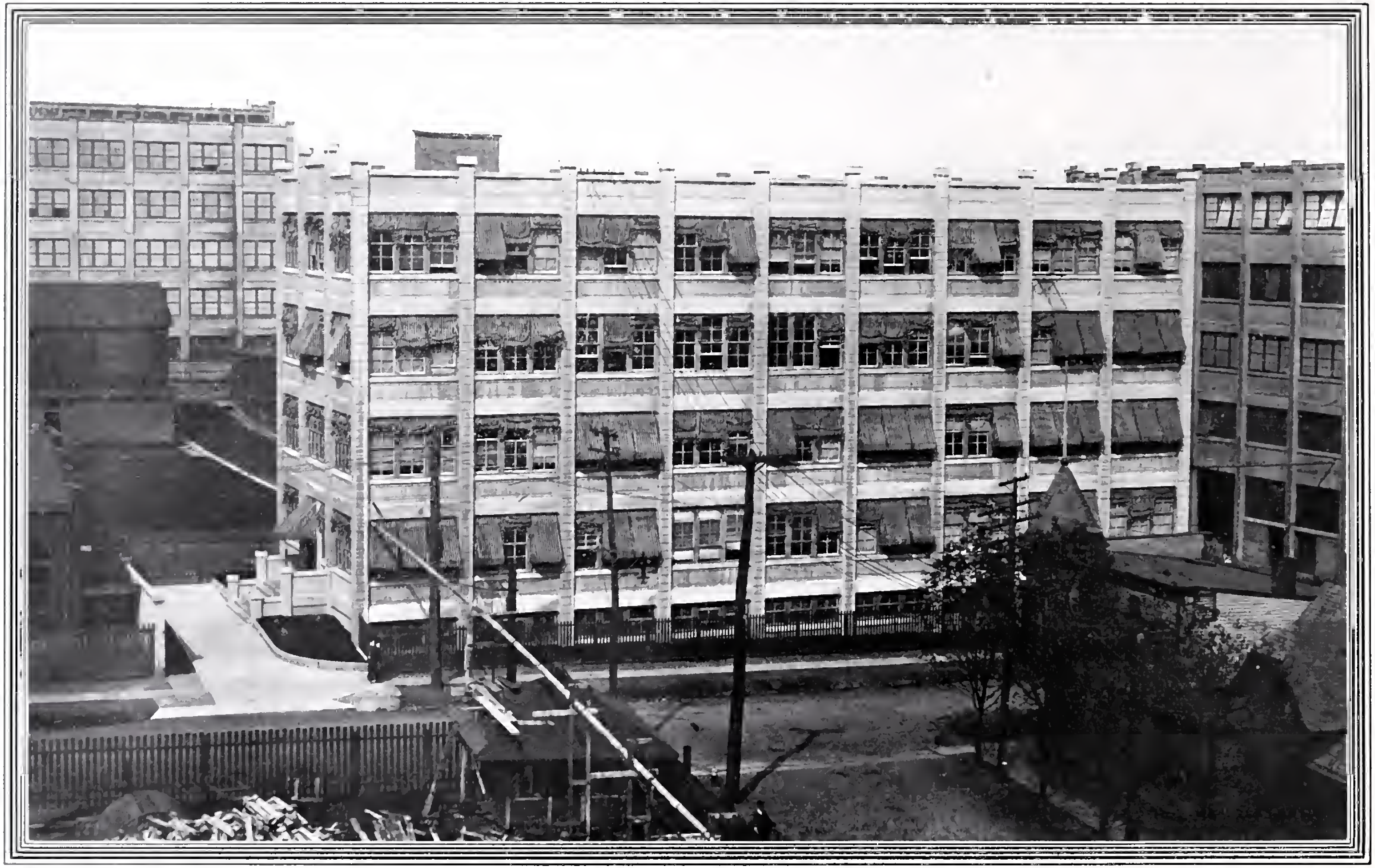
THE BRIDGEMAN BUILDING, 15th ST. AND WASHINGTON AVE., PHILADELPHIA.

Ballinger & Perrot, Architects, Philadelphia. Moon & Co., Contractors.

"Edison" used exclusively.

TWENTY-FIVE MILES OF CEMENT SIDEWALKS AT NEW BERN, N. C.

Edison Portland Cement used exclusively, Alsop & Peirce, Engineers and Contractors.



GROUP OF REINFORCED CONCRETE BUILDINGS, NATIONAL PHONOGRAPH CO'S WORKS, ORANGE, N. J.

60,000 barrels of Edison Portland Cement used.

FRICK ANNEX, PITTSBURG, PA.

D. H. Burnham & Co., Architects, Chicago, Ill.

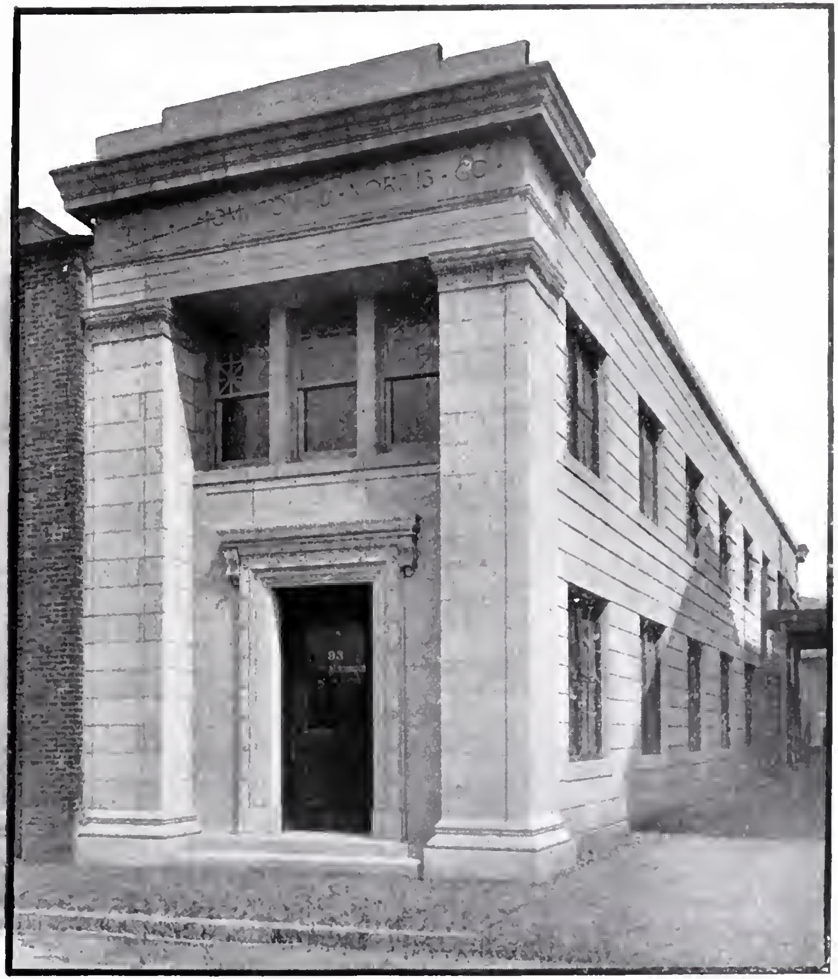
Falkenau Construction Co., Contractors, Chicago, Ill.

5,000 barrels of Edison Portland Cement used.

MACHESNEY BUILDING. PITTSBURG, PA.

Thos. H. Scott, Architect, Pittsburg, Pa. Geo. A. Fuller Co., Contractors.

3,000 barrels of Edison Portland Cement used.

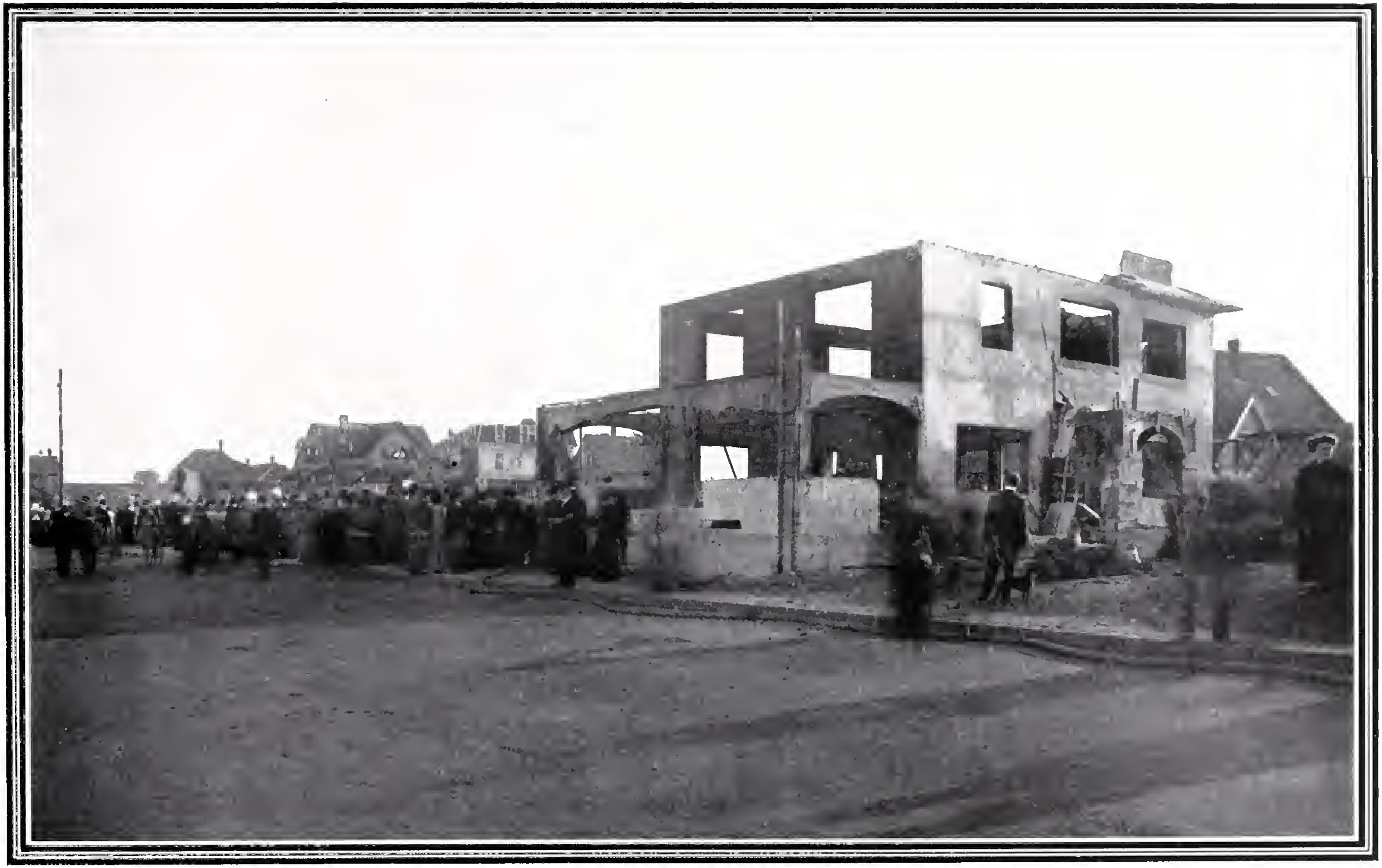


THOMPSON & NORRIS BUILDING, BOSTON, MASS.

"Edison" used exclusively.

WINTHROP FIRE.—PHOTOGRAPH TAKEN 1 A. M., OCTOBER 2d, BY THE LIGHT OF THE FIRE.

Winthrop Boulevard was swept by a fire, causing the loss of two lives and a property loss estimated at over $200,000. The flames swept the section of hotels and summer cottages on the Boulevard, beginning east of Ocean View Avenue. The concrete building, which so effectually stopped the progress of the fire, was being constructed by John J. Smith, Architect, of Edison Portland Cement.



WINTHROP CONCRETE BUILDING AFTER THE FIRE.

The walls of the first story were 10 inches thick with a continuous hollow core of air space 3 inches wide, and the second story was built solid 8 inches thick; proportion, 1 "Edison" -3-6. This building stood within 8 feet of the boiler room of the Crest Hall Hotel, where the fire began, and bore the brunt of the fire. Within an hour, two of the finest hotels and seven other houses were a mass of ruins. The granite curbings, on the sidewalks across the street, were split and crumbled as if they had been broken away with a sledge hammer. The roof was partially constructed of stucco over wire lath and supported by wooden roof beams, causing the roof to burn slowly and afterwards to fall.

STANDARD SPECIFICATIONS FOR PORTLAND CEMENT

Adopted by AMERICAN SOCIETY OF CIVIL ENGINEERS and AMERICAN SOCIETY FOR TESTING MATERIALS

Definition—This term is applied to the finely pulverized product resulting from the calcination to incipient fusion of an intimate mixture of properly proportioned argillaceous and calcareous materials, and to which no addition greater than 3% has been made subsequent to calcination.

Specific Gravity—The specific gravity of the cement, thoroughly dried at 100° C., shall not be less than 3.10.

***Fineness**—It shall leave by weight a residue of not more than 8% on the No. 100, and not more than 25% on the No. 200 sieve.

Time of Setting—It shall develop initial set in not less than thirty minutes, but must develop hard set in not less than one hour nor more than ten hours.

Tensile Strength—The minimum requirements for tensile strength for briquettes one inch square in section shall be within the following limits, and shall show no retrogression in strength within the periods specified:†

Age	*Strength*
Neat Cement	
24 hours in moist air	150-200 lbs.
7 days (1 day in moist air, 6 days in water)	450-550 "
28 days (1 day in moist air, 27 days in water)	550-650 "
One Part Cement, Three Parts Sand	
7 days (1 day in moist air, 6 days in water)	150-200 "
28 days (1 day in moist air, 27 days in water)	200-300 "

Constancy of Volume—Pats of neat cement about three inches in diameter, one-half inch thick at the centre, and tapering to a thin edge, shall be kept in moist air for a period of 24 hours.

(*a*) A pat is then kept in air at normal temperature and observed at intervals for at least 28 days.

(*b*) Another pat is kept in water maintained as near 70° F. as practicable, and observed at intervals for at least 28 days.

(*c*) A third pat is exposed in any convenient way in an atmosphere of steam, above boiling water, in a loosely closed vessel for five hours.

These pats, to satisfactorily pass the requirements, shall remain firm and hard and show no signs of distortion, checking, cracking or disintegrating.

Sulphuric Acid and Magnesia—The cement shall not contain more than .75% of anhydrous sulphuric acid (SO_3), nor more than 4% of magnesia (MgO).

***Edison Portland Cement far exceeds this, having less than 2% residue on No. 100 and only 15% on a No. 200 sieve.**

† For example the minimum requirement for the twenty-four hour neat cement test should be some specified value within the limits of 150 and 200 pounds, and so on for each period stated.

Every Barrel of Edison Portland Cement is Guaranteed to Pass these Specifications

HOW TO MIX—FOR THE INEXPERIENCED WORKER

Portland Cement Sidewalks

Foundation—The ground should be excavated at least 18 inches below the grade level. If this bottom is not solid, it should be thoroughly tamped. It is then filled with clean cinders, coarse gravel, broken stones or brick, which should be wet as it is put in and thoroughly tamped to make a firm, yet porous mass. This is brought up to within four inches of the grade line and is then ready for the concrete. In southern climates where there is little or no frost, the excavation and filling may be omitted.

Preparation of the Concrete—This should be made as follows: Take 1 part Edison Portland Cememt, 2½ parts clean sand, and mix them thoroughly, dry. Spread out 5 parts clean broken stone, size 1 inch to 1½ inches, and wet thoroughly. Spread the sand and cement over this and turn over once with the shovel. Then add water and turn the entire mass 2 or 3 times until it becomes a paste just too thick to flow readily. This should be spread in a layer 3 to 3¼ inches thick and tamped slightly if necessary. When it is hard enough, cut into blocks as explained below.

The **wearing surface** should be put on this while it is yet green, or at least before it has attained its permanent hardness. This should be made of 3 parts Edison Portland Cement and 5 parts clean sand.

It is preferable to make the work in alternate sections of say not over 5 or 6 feet square, but when for convenience it is desirable to run it continuously, do not fail to cut into blocks of this size or smaller.

The joints are necessary, not for the purpose of imitating flag stone, but to provide a line of fracture in case of settling, expansion and contraction. To save time many sidewalk men prefer to run the cement continuously, and there is no objection to this if care is taken to see that the joints are cut through from top to bottom of the concrete. In warm weather keep the walk wet 3 or 4 days after making and it will become harder and lighter in color.

One barrel of cement will make about 60 square feet of walk.

Mortar for Brick and Stone Masonry

Use one barrel of Edison Portland Cement, four barrels clean sand and two pails of thick lime paste. This latter makes the mortar work more easily under the trowel.

Concrete for General Purposes

For Heavy Machinery Where there is Much Vibration—1 part Edison Portland Cement, 3 parts clean sand, 5 parts broken stone. About one barrel of cement required per cubic yard of concrete.

For General Construction—1 part Edison Portland Cement, 3 parts clean sand, 7 parts broken stone. About nine-tenths of a barrel of cement required per cubic yard of concrete.

For Many Ordinary Purposes—1 part Edison Portland Cement, 4 parts clean sand, 9 parts broken stone. About three-quarters of a barrel of cement required per cubic yard of concrete.

NOTE—In the place of broken stone, clean gravel may be substituted if attention is given to see that it carries enough sand to meet the above proportions. Blast furnace slag and cinder may be used with similar precautions.

Important Heavy Concrete Work on Which Edison Portland Cement Has Been Used—A Few Prominent Users of "Edison" Cement

FEDERAL AND MUNICIPAL WORK.

	No. of Bbls.
Huston Constructing Co., Havana Cuba, for government roads, Cuba	20,000
U. S. Government dry dock, Brooklyn, N. Y.	100,000
Southern Power Co., Great Falls, S. C.	80,000
Additional dam construction work in vicinity of Great Falls, S. C.	100,000
Fort Halifax Power Co., Waterville, Me., for work at Winslow, Me., on construction of dam and power house	10,000
Little Androscoggin Water Power Co., Auburn, Me., for construction of dam and power house at Auburn, Me.	10,000
Kaministiquia Power Co. dam, Kakaheka Falls, Canada	10,000
New York Edison Co., new water side station and additional subway construction, New York City	50,000
Manhattan Bridge, New York	30,000
Williams Engineering Co., New York, sewers	50,000
Bradley Contracting Co., New York, subway	125,000

Central R. R. of N. J., docks and piers, including 160 feet of sea-wall.
Lock and dam No. 12, Kentucky River, U. S. G.
U. S. Navy Yard, Portsmouth, N. H.
U. S. Navy Yard, Charleston, S. C.
Ice Piers, Ohio River, Gallipolis, O., U. S. G.
Harrison St. Viaduct, Cincinnati, O.
Delta St. Viaduct, Cincinnati, O.
Government Roads, Cuba.
Barber Asphalt Co., Philadelphia.
Central Pennsylvania Traction Co.
Philadelphia Rapid Transit Co.'s subway.
Erie R. R. Genesee River Works.
New York State Barge Canal.
Analomink Paper Co., Water Gap, Pa., Dams.
Department of Agriculture, Washington, D. C.
League Island Navy Yard, Philadelphia.

FILTRATION PLANTS.

Philadelphia Filtration System.
McKeesport Filtration System.
Norwalk, Conn., Filtration System.

BRIDGE CONSTRUCTION WORK.

Manhattan Bridge anchorage, Pike St. slip, New York.
Monroe County, Pa., bridges.
Bridge and arch construction along D. L. & W. R. R.

IMPORTANT BUILDINGS.

Bernard Gloekler Bldg., Pittsburgh, Pa. (12,000).
Standard Roller Bearing Co's Bldg., Philadelphia.
Macaulay Bldg., 18th St. and Fifth Ave., Brooklyn.
New Union Ry. Station, Washington, D. C.
Thompson & Norris Bldg., Concord and Prince Sts., Brooklyn.
Wm. H. Sweeney Bldg., Water St., Brooklyn (10,000).
Municipal Hospital, Philadelphia.
State Hospital, Binghamton, N. Y.
State Armory, Syracuse, N. Y.
Earle Gear & Machine Co's Bldg., Philadelphia.
Underwood Typewriter Bldg., Hartford, Conn.
Colored Orphan Asylum Bldgs., Riverdale, N. Y.
General Electric Co's Bldgs., Schenectady, N. Y.
General Electric Co's Bldgs., Lynn, Mass.
General Electric Co., Harrison, N. J.
Haywood Bros. & Wakefield Co., Philadelphia.
State Normal School, Montclair, N. J.
Berg & Co. Hat Factory, Orange, N. J.
National Phonograph Works, Nine Factory Buildings, Orange, N. J.
Vernon Public School, Harrisburg, Pa.
Williamsburg Power House for Brooklyn Rapid Transit Co.
Brookline Engine House, Station A, Brookline, Mass.

STEEL COMPANIES.

Pennsylvania Steel Co.
Bethlehem Steel Co.
Lackawanna Iron & Steel Co.
Lackawanna Steel Co.
Worth Bros.
Lukens Iron & Steel Co.
American Bridge Co.
Jones & Laughlin.
Longmead Iron Co.
Empire Iron & Steel Co.
Maryland Steel Co.
Superior Steel Co.
Fort Pitt Malleable Iron Co.
Erie City Iron Works.
Republic Iron & Steel Co.
Midvale Steel Co.
Pennsylvania Iron Co.
Chrome Steel Works.
Crucible Steel Co. of America.
American Sheet & Tin Plate Co.
Des Moines Bright & Iron Co.
West Leechburg Steel Co.
Delaware & Lackawanna Steel Co.
Farist Steel Co.
Page Woven Wire Fence Co.
National Tube Co.
Shelby Steel Tube Co.

RAILROADS.

Pennsylvania.
Philadelphia & Reading.
Delaware, Lackawanna & Western.

RAILROADS—Continued.

Central R. R. of N. J.
Erie.
Norfolk & Western.
Southern.
Lake Shore.
American Railways Co.
Bessemer & Lake Erie.
Canadian Pacific.
Baltimore & Ohio.
Norwood & St. Lawrence Railway Co.
N. Y., Susquehanna & Western.
Buffalo, Rochester & Pittsburgh.
Richmond & Henrico Railway.
Philadelphia Rapid Transit.
Brooklyn Rapid Transit.
New York Subway.

PROMINENT ENGINEERS, MANUFACTURING AND CONTRACTING FIRMS.

H. C. Frick Coke Co., Pittsburgh.
Baldwin Locomotive Works, Philadelphia.
General Electric Co., Schenectady, N. Y.
Westinghouse Church Kerr Co., New York.
John A. Roebling's Sons Co., Trenton, N. J.
American Locomotive Co., New York.
The New York Edison Co., New York.
New Jersey Zinc Co., Jersey City.
Westinghouse Machine Co., New York.
National Phonograph Co., Orange, N. J.
Pressed Steel Car Co., Pittsburgh.
J. G. White & Co., Engineers, New York.
The General Fire Extinguisher Co., Providence, R. I.
American Pipe Mfg. Co., Philadelphia.
United States Navy Yard, Portsmouth, N. H.
United States Navy Yard, Washington.
United States Navy Yard, Philadelphia, and other yards.
General Electric Co., Lynn, Mass.
James Stewart & Co., New York.
Penn Gas Coal Co., Philadelphia.
Shoemaker Coal Mining Co., Philadelphia.
Commercial Coal Mining Co., Philadelphia.
Cornwall Ore Bank Co., Cornwall, Pa.
Empire Steel & Iron Co., Catasauqua, Pa.
Milton Mfg., Co., Milton, Pa.
National Fire Proofing Co., New York, Philadelphia, Pittsburgh and Boston.
H. B. Macomber & Co., Boston.
Metropolitan Water and Sewerage Board, Boston.
E. R. Taylor & Co., Boston.
W. A. Murtfeldt & Co., Boston.
Wm. Steele & Sons Co., Philadelphia.

TRADE
Thomas A. Edison
MARK

EDISON
PORTLAND
CEMENT
COMPANY
NEW VILLAGE,
N.J.